

## PATENT ABSTRACTS OF JAPAN

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(54) SYSTEM AND METHOD FOR CHARGING ON MEASURING UNIT, RECORDING MEDIUM STORED WITH CHARGING PROGRAM, MEASURING UNIT AND SREVER

(57)Abstract:

PROBLEM TO BE SOLVED: To suppress the cost charge of a user to be minimum when a measuring unit is used by leasing or renting.

SOLUTION: The measuring unit 1, a computer 2 connected to the measuring unit 1 and a server 4 connected to the computer 2 through the Internet 3 are installed. The computer 2 is connected to the server 4 at specified time from the operation start of the measuring unit 1 to operation termination, for example, at measurement start time and measurement termination time, and transmits a signal showing that the measuring unit 1 is used, to the server 4. The server 4 generates charging data corresponding to the number of using times of the measuring unit 1 based on the signal.



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CLAIMS

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[Claim(s)]

[Claim 1] It is the accounting system of the measuring instrument which is equipped with the control unit which notifies that the measuring instrument concerned was used at the specific time from initiation of a measuring instrument of operation to termination of operation are a measuring instrument and management equipment which manages the account data for charging to use of this measuring instrument to said management equipment, and is characterized by for said management equipment to generate the account data according to the use count of a measuring instrument based on the notice from said control unit.

[Claim 2] It has a measuring instrument, the computer connected to this measuring instrument, and the server connected with this computer through the network. Said computer transmits the signal showing having connected with said server and the measuring instrument having been used at the specific time from initiation of a measuring instrument of operation to termination of operation to the server concerned. Said server is the accounting system of the measuring instrument characterized by generating the account data according to the use count of a measuring instrument based on said signal.

[Claim 3] Said computer is the accounting system of the measuring instrument according to claim 2 which is connected to a server at the time of measurement initiation of a measuring instrument, or measurement termination, and transmits said signal to a server.

[Claim 4] Said computer is the accounting system of the measuring instrument according to claim 2 which is connected to a server after the measurement result display of a measuring instrument, and transmits said signal to a server.

[Claim 5] It is the accounting system of the measuring instrument according to claim 2 which said computer is connected to a server whenever measurement in each time is completed, or whenever the display of the measurement result in each time is completed when measuring by carrying out count continuation of predetermined, and transmits said signal to a server.

[Claim 6] The accounting system of the measuring instrument according to claim 2 to 5 whose network is the Internet.

[Claim 7] It is the accounting approach charged to use of a measuring instrument by the measuring instrument, the computer connected to this measuring instrument, and the server connected with this computer through the network. The step which connects said computer to said server at the specific time from initiation of a measuring instrument of operation to termination of operation, The accounting approach of the measuring instrument characterized by having the step which transmits the signal showing the measuring instrument having been used to said server, and the step which generates the account data according to the use count of a measuring instrument in a server based on said signal from said computer.

[Claim 8] The accounting approach of the measuring instrument according to claim 7 which connects a computer to a server at the time of measurement initiation of a measuring instrument, or measurement termination.

[Claim 9] The accounting approach of the measuring instrument according to claim 7 which connects a

computer to a server after the measurement result display of a measuring instrument.

[Claim 10] when measuring by carrying out count continuation of predetermined, measurement in each time is completed -- \*\* -- it is alike or the display of the measurement result in each time is completed -- \*\* -- the accounting approach of the measuring instrument according to claim 7 which is alike and connects a computer to a server.

[Claim 11] It is the record medium used in the system equipped with the measuring instrument, the computer connected to this measuring instrument, and the server which generates the account data according to the use count of the measuring instrument concerned in response to the notice of the measuring instrument having been used from this computer. The processing which connects said computer to said server through a network at the specific time from initiation of a measuring instrument of operation to termination of operation, The record medium which recorded the program which makes a computer perform processing which transmits the signal showing the measuring instrument having been used to said server from said computer, and processing which ends connection with said computer and said server.

[Claim 12] It is the record medium used in the system equipped with the measuring instrument, the computer connected to this measuring instrument, and the server which generates the account data according to the use count of the measuring instrument concerned in response to the notice of the measuring instrument having been used from this computer. The processing which makes a measuring instrument perform measurement, and the processing which displays the measured result, The processing which connects said computer to said server through a network at the specific time from initiation of a measuring instrument of operation to termination of operation, The record medium which recorded the program which makes a computer perform processing which transmits the signal showing the measuring instrument having been used, and processing which ends connection with said computer and said server on said server from said computer.

[Claim 13] To a server the notice of the measuring instrument having been used from the computer connected to the measuring instrument Delivery, The processing which it is [ processing ] the measuring instrument with which the server which received this notice is used in the system which generates the account data according to the use count of the measuring instrument concerned, and performs measurement, The processing which displays the measured result, and the processing which connects said computer to said server through a network at the specific time from initiation of a measuring instrument of operation to termination of operation, The measuring instrument characterized by having the storage section which memorized the program which makes a computer perform processing which transmits the signal showing the measuring instrument having been used to said server from said computer, and processing which ends connection with said computer and said server.

[Claim 14] The user table which is the server which receives the notice of the measuring instrument having been used from the computer connected to the measuring instrument, and generates the account data according to the use count of the measuring instrument concerned based on this notice, and recorded the user who uses a measuring instrument, It has the accounting data table classified by user which recorded the account data for every user. The server characterized by specifying a user with reference to said user table, and updating the account data of said accounting data table classified by user corresponding to the user concerned to new account data whenever it receives the notice of the measuring instrument having been used from said computer.

[Claim 15] It is the accounting system of the measuring instrument which is equipped with a measuring instrument, the management equipment which manages the account data for charging to use of this measuring instrument, and the control unit which notifies the time of that said measuring instrument was used and a measuring instrument to said management equipment, and is characterized by said management equipment generating the account data according to the time of a measuring instrument based on the notice from said control unit.

[Claim 16] The step which is the accounting approach charged to use of a measuring instrument by the measuring instrument, the computer connected to this measuring instrument, and the server connected with this computer through the network, and carries out counting of the time of a measuring instrument,

The step which connects said computer to said server after measurement termination, The accounting approach of the measuring instrument characterized by having the step which transmits the data of the time of a measuring instrument to said server from said computer, and the step which generates the account data according to the time of a measuring instrument in a server based on said data.

[Claim 17] The accounting system of the measuring instrument according to claim 1 or 15 with which the measuring instrument is making the control unit serve a double purpose.

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[Translation done.]

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**DETAILED DESCRIPTION**

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**[Detailed Description of the Invention]**

**[0001]**

**[Field of the Invention]** This invention relates to the accounting system and the accounting approach of performing accounting according to the use count, the record medium which recorded the program for accounting, a measuring instrument, and a server, when the measuring instrument for measuring the carbon for example, in a metal sample and sulphuric concentration is lent to a user by lease or rental.

**[0002]**

**[Description of the Prior Art]** Although the user is purchasing and using the measuring instrument from the manufacturer conventionally, generally a measuring instrument does not have many which have the operating frequency where there are many expensive things and it is comparatively [ the ] low, either. Therefore, purchasing such a measuring instrument has the problem that cost starts too much for a user. Then, a measuring instrument is lent out to a user by lease or rental, and the system which collects the dues is put in practical use. According to this, the burden of the initial investment accompanying the measuring instrument purchase by the side of a user is mitigated.

**[0003]**

**[Problem(s) to be Solved by the Invention]** However, in the system of the present lease (rental), since the fixed accounting system by which the rental revenue of the fixed amount is charged every month was usually adopted, even if the operating frequency of a measuring instrument was low, accounting of the fixed amount will be carried out, and it had led to the cost rise by the side of a user as a result.

**[0004]** This invention makes it the technical problem to control the cost burden of the user in the case of using a measuring instrument by lease or rental in view of the above points to the minimum.

**[0005]**

**[Means for Solving the Problem]** In order to solve the above-mentioned technical problem, the accounting system concerning this invention A measuring instrument and the management equipment which manages the account data for charging to use of this measuring instrument, He has the control unit which notifies that the measuring instrument concerned was used at the specific time from initiation of a measuring instrument of operation to termination of operation to said management equipment, and is trying for said management equipment to generate the account data according to the use count of a measuring instrument based on the notice from said control unit.

**[0006]** Here, a control unit is typically realized as a computer connected to the measuring instrument, and management equipment is typically realized as a server. And a computer is connected with a server through a network like the Internet while connecting with a measuring instrument. A server is equipped with a user table and the accounting data table classified by user, whenever it receives the notice of the measuring instrument having been used from a computer, specifies a user with reference to a user table, and updates the account data of the accounting data table classified by user corresponding to the user concerned.

**[0007]** Moreover, the computer by which the accounting approach concerning this invention was connected to a measuring instrument and this measuring instrument, It is the accounting approach

charged to use of a measuring instrument by the server connected with this computer through the network. The step which connects a computer to a server at the specific time from initiation of a measuring instrument of operation to termination of operation, It has from a computer the step which transmits the signal showing the measuring instrument having been used to the server, and the step which generates the account data according to the use count of a measuring instrument in a server based on said signal.

[0008] Since account data will be generated whenever a measuring instrument is used by doing in this way, and accounting according to the use count of a measuring instrument is carried out, the frame which will be charged if operating frequency is low becomes low, and the frame which will be charged if operating frequency is high also becomes high. Therefore, it becomes possible to perform rational accounting adapted to the actual condition of use by the user side.

[0009] As timing which transmits the signal showing the measuring instrument having been used to a server, you may be at the measurement initiation time and may be at the measurement termination time. Or after replacing with these and displaying a measurement result, you may be. Moreover, what is necessary is just to transmit a signal to a server, when measuring by carrying out count continuation of predetermined whenever measurement in each time is completed, or whenever the display of the measurement result in each time is completed.

[0010] Moreover, there are two classes of record media concerning this invention. One is the record medium which recorded the independent program for accounting, and the program which makes a computer perform the processing which connects a computer to a server through a network at the specific time from initiation of a measuring instrument of operation to termination of operation, the processing which transmits the signal showing the measuring instrument having been used from a computer to a server, and the processing which end connection between a computer and a server records.

[0011] The processing which another is [ processing ] the record medium which incorporated the function of the program for accounting into the program for measurement, and makes a measuring instrument perform measurement, The processing which displays the measured result, and the processing which connects a computer to a server through a network at the specific time from initiation of a measuring instrument of operation to termination of operation, The program which makes a computer perform processing which transmits the signal showing the measuring instrument having been used, and processing which ends connection between a computer and a server is recorded on a server from a computer.

[0012] In this invention, the record medium which recorded such a program begins portable mold media, such as a floppy disk and CD-ROM, and takes various gestalten like the file on the hard disk built in a computer, semiconductor memory, or a server. Moreover, a program may be given to a computer, and not only a server but the measuring instrument itself.

[0013] Moreover, although there are some for which the measurement itself does not depend for on a count depending on the class of measuring instrument, but it depends on a time, for example like a microscope, about such a measuring instrument, it replaces with a use count and may be made to perform accounting based on a time. Furthermore, a control unit may be made to use also [ measuring instrument ] in this invention.

[0014]

[Embodiment of the Invention] Hereafter, it explains about the operation gestalt of this invention, referring to drawing. Drawing 1 is the system configuration Fig. showing an example of the accounting system concerning this invention. In drawing, 1 is a measuring instrument, for example, is equipment which analyzes carbon and sulfur in steel quantitatively. 2 is computers, such as a personal computer (PC) connected with the measuring instrument 1, and constitutes the control unit of this invention. 3 is the Internet to which a computer 2 is connected, and constitutes the network of this invention. 4 is a server connected to the Internet 4, and constitutes the management equipment of this invention.

[0015] Drawing 2 is the block diagram showing the configuration of a measuring instrument 1. Measuring instruments 1 are carbon / sulfur analysis apparatus as mentioned above, and consist of the

RF incinerator 11, a dust filter 12, a dehydrator 13, and an infrared detector 14. an oxygen air current with this well-known analysis apparatus -- the crown -- the concentration of the carbon contained in a sample or sulfur is measured using a cycle heating combustion method and an infrared absorption method. That is, from the oxygen cylinder which is not illustrated, oxygen is supplied to the high frequency incinerator 11, and samples, such as steel, are burned in the high frequency incinerator 11 in it. The dust contained in the gas which occurs at this time is removed by the dust filter 12, and the moisture in gas is removed by the dehydrator 13. And CO, CO<sub>2</sub>, and SO<sub>2</sub> which are contained in combustion gas are detected by the infrared detector 14, and this detection output is inputted into a computer 2. A computer 2 performs data processing based on the above-mentioned output, calculates the concentration of each element, and displays the data.

[0016] Drawing 3 is the block diagram showing the hardware configuration of a computer 2. 21 is the input section which performs a predetermined entry of data, selection of a menu, etc., and consists of input units, such as a keyboard and a mouse. 22 is the data-processing section which performs data processing based on the signal from a measuring instrument 1 and the input section 21, and consists of CPUs. 23 is a display which displays the result calculated in the data-processing section 22, and consists of CRT, a liquid crystal display, etc.

[0017] 24 is the storage section which memorizes a program required for actuation of a computer 2, the analytical data calculated by the data-processing section 22, and consists of RAM, a ROM, a hard disk, etc. 25 is a record-medium reader, for example, consists of a floppy (trademark) disk driver, a CD-ROM driver, etc. 26 is the communications control section for making connection with the Internet, and consists of modems.

[0018] 27 is the record medium which recorded the application program for measurement, and the application program for accounting, for example, consists of floppy disk (it is described as Following FD) 27a, CD-ROM 27b, etc. 28 is a printer by which external is carried out to a computer 2, and is for printing analytical data in a form.

[0019] Drawing 4 shows an example of the display screen of a display 23. The field which displays numerically the analysis result of the concentration value of the carbon which contains 30 in the sample, and sulfur, the field where 31 displays the analyzed data for every sample numerically, and 32 are fields which display carbon / sulfur extract gas curve, a plate current value, etc. under analysis in a graph. Moreover, down the screen, the icon of the measurement initiation carbon button 33 and the continuous measurement carbon button 34 is prepared.

[0020] Drawing 5 is drawing having shown the contents of storage of the storage section 24 on the table. (a) shows some contents of storage of hard disk 24a, and (b) shows some contents of storage of RAM 24b, respectively. The OS (Operating System) program 40 for operating a computer 2, as shown in (a), and the application program 41 for measurement for measuring using a measuring instrument 1 are installed in hard disk 24a. The function of the application program for accounting mentioned later is included in the application program 41 for measurement here. This hard disk 24a also makes 1 operation gestalt of the record medium in this invention. Moreover, although illustration is omitted, the field for saving the analytical data calculated by the data-processing section 22 is also established in hard disk 24a. On the other hand, the measurement data 43 measured by the measuring instrument 1 as shown in (b), the indicative data 44 displayed on a display 23 are temporarily stored in RAM 24b.

[0021] The above-mentioned application program 41 for measurement is installed using the record media 27, such as the above-mentioned FD 27a and CD-ROM 27b. Drawing 6 is drawing having shown the contents of storage of a record medium 27 on the table, and the application program 41 for measurement is stored. By inserting a record medium 27 in the record-medium reader 25, and performing install actuation, the application program 41 for measurement is stored in the predetermined field of hard disk 24a, as drawing 5 (a) showed.

[0022] Moreover, the application program 41 for measurement is also downloadable from a server 4 through the Internet 3 ( drawing 1 ). Drawing 7 is drawing having shown some contents of storage of file 4a of a server 4 on the table. The application program 41 for measurement, the user table 45 which recorded the user who uses a measuring instrument, the accounting data table 46 classified by user



which recorded the account data for every user are stored in file 4a. File 4a of this server 4 also makes 1 operation gestalt of the record medium in this invention. By connecting a computer 2 to the Internet 3 through the communications control section 26, accessing to a server 4, and downloading the application program 41 for measurement of file 4a, a program 41 is stored in the predetermined field of hard disk 24a, as drawing 5 (a) showed.

[0023] Drawing 8 is the outline flowchart which showed a series of actuation of the accounting system which consists of the above configuration, and drawing 9 thru/or drawing 13 are the detail flowchart. First, an outline of operation is explained according to the flow chart of drawing 8. In drawing 8, step S1 - S4 are processings which the computer 2 by the side of a user (PC) performs, and steps S5-S7 are processings which a server 4 performs. If the power source of a measuring instrument 1 is turned on (step S1) and the power source of a computer 2 is turned on (step S2), the application program 41 for measurement will be started with the OS program 40 stored in hard disk 24a (step S3).

[0024] Then, while measurement by the measuring instrument 1 is performed according to the above-mentioned application program 41 for measurement, processing for accounting is performed (step S4). Although later mentioned about the detail of this step S4, in step S4, a signal is transmitted to a server 4 from a computer 2 at the specific time from measurement actuation initiation to termination of operation, and it is notified to a server 4 that the measuring instrument 1 was used by this signal.

[0025] In a server 4, if said signal is received from a computer 2 (step S5), IP (Internet Protocol) address included in this signal will be read, and a user will be specified with reference to the user table 45 (drawing 7) of file 4a (step S6). In addition, a user's specific approach is not restricted to an IP address, may include a user's identifier, a name, etc. as text data in the signal which notifies that the measuring instrument from a computer 2 was used, and may adopt the approach of reading this by the server 4 and identifying a user. Also in the following operation gestalten, it is the same.

[0026] Then, the account data of the user concerned in the accounting data table 46 classified by user of file 4a is updated (step S7). The accounting data table 46 classified by user is recorded as an accumulation value of the use count of the measuring instrument 1 in a predetermined period, and whenever a measuring instrument 1 is used once, an increment is carried out every [ 1 ] and it is updated.

[0027] In addition, a manufacturer may lease a measuring instrument 1 to a direct user (rental), and it may be leased through a leasing company etc. (rental). Therefore, the owner of a server 4 is a manufacturer or a leasing company. In a manufacturer or a leasing company, measuring instrument dues are calculated based on the accounting data table 46 classified by user accumulated in the server 4, and a user is asked for dues. The dues charged serve as a frame according to the use count of the measuring instrument 1 by the side of a user.

[0028] Drawing 9 is the flow chart which showed drawing 8 more to the detail, and is an example which performs accounting at the time of measurement initiation. Steps S11-S13 are equivalent to steps S1-S3 of drawing 8, respectively, and steps S14-S21 support step S4 of drawing 8. Moreover, steps S22-S24 are equivalent to steps S5-S7 of drawing 8, respectively. Hereafter, actuation is explained with reference to drawing 9.

[0029] If the power source of a measuring instrument 1 is turned on (step S11) and the power source of a computer 2 is turned on (step S12), the application program 41 for measurement stored in hard disk 24a will be started (step S13). A screen as shown by drawing 4 is displayed on the display 23 of a computer 2 by the startup of this program 41 (however, data un-displaying).

[0030] Then, a series of procedures P1 which consist of steps S14-S21 are performed. This procedure P1 is the contents of the application program 41 for measurement, and hard disk 24a (drawing 5 (a)) mentioned above, a record medium 27 (drawing 6), and the application program 41 for measurement recorded on file 4a (drawing 7) of a server 4 are programs which make a computer 2 perform the above-mentioned procedure P1.

[0031] Next, the detail of a procedure P1 is explained. First, it judges whether the measurement initiation carbon button 33 was turned on in the screen of the display 23 of drawing 4 (step S14). The measurement initiation carbon button 33 serves as ON by clicking on a screen using the mouse of the

input section 21. If the measurement initiation carbon button 33 is turned on (step S14; YES), the data-processing section 22 will connect a computer 2 to a server 4 through the communications control section 26 and the Internet 3 (step S15). Then, the signal showing starting measurement with a measuring instrument 1 is transmitted to a server 4 from a computer 2 (step S16).

[0032] In a server 4, the IP address included in the received measurement start signal is read, and a user is specified with reference to the user table 45 as steps S6 and S7 of drawing 8 explained that the above-mentioned measurement start signal was received (step S23). (step S22) And the account data of the accounting data table 46 classified by user is incremented and updated (step S24).

[0033] On the other hand, in a computer 2 side, after transmission of the measurement start signal of step S16 is completed, the data-processing section 22 ends connection between a computer 2 and the Internet 3 (step S17). A computer 2 is separated from a server 4 by this. Then, measurement by the measuring instrument 1 is performed (step S18), and based on the measurement data, the data-processing section 22 performs data processing, and displays a measurement result on a display 23 like drawing 4 (step S19).

[0034] Next, it judges whether the application program for measurement is ended (step S20). Actuation will be ended if actuation of program termination is performed (step S20; YES). If it judges whether the measurement initiation carbon button 33 was turned on if actuation of program termination was not performed (step S20; NO) (step S21) and the measurement initiation carbon button 33 is not turned on, either (step S21; NO), it returns to step S20 and waits for termination of a program.

[0035] Moreover, if the measurement initiation carbon button 33 is turned on (step S21; YES), it will return to step S15, a computer 2 will be connected to a server 4, and the 2nd measurement start signal will be transmitted to a server 4 (step S16). In a server 4, the above-mentioned measurement start signal is received (step S22), an IP address is read, a user is specified from the user table 45 (step S23), and the account data of the accounting data table 46 classified by user is incremented and updated after that (step S24). Thus, whenever it receives a measurement start signal from a computer 2, the increment of the accounting data table 46 classified by user is carried out. In a computer 2 side, after transmission of a signal is completed, connection between a computer 2 and the Internet 3 is ended (step S17), and the actuation mentioned above is repeated henceforth.

[0036] In the example of drawing 9, a computer 2 is connected to a server 4 as mentioned above at the time of measurement initiation of a measuring instrument 1, and a measurement start signal is transmitted to a server 4 from a computer 2. And in the server 4, this signal was received and the accounting data table 46 classified by user is updated. Therefore, whenever a measuring instrument 1 is used, a measurement start signal will be transmitted to a server 4, and the increment of the accounting data table 46 classified by user is carried out every [ 1 ] to one use of a measuring instrument 1. For this reason, the frame charged turns into the amount of money according to the use count of a measuring instrument. Moreover, since measurement will not be started if it is not after connecting a computer 2 to a server 4 and transmitting a measurement start signal, positive accounting can be performed.

[0037] Drawing 10 is a flow chart which shows other operation gestalten of this invention, and is an example which performs accounting after measurement termination. Steps S31-S33 are equivalent to steps S1-S3 of drawing 8, respectively, and steps S34-S42 support step S4 of drawing 8. Moreover, steps S43-S45 are equivalent to steps S5-S7 of drawing 8, respectively. Hereafter, actuation is explained with reference to drawing 10.

[0038] If the power source of a measuring instrument 1 is turned on (step S31) and the power source of a computer 2 is turned on (step S32), the application program 41 for measurement stored in hard disk 24a will be started (step S33). A screen as shown by drawing 4 is displayed on the display 23 of a computer 2 by the startup of this program 41 (however, data un-displaying).

[0039] Then, a series of procedures P2 which consist of steps S34-S42 are performed. This procedure P2 is the contents of the application program 41 for measurement, and hard disk 24a ( drawing 5 (a)) mentioned above, a record medium 27 ( drawing 6 ), and the application program 41 for measurement recorded on file 4a ( drawing 7 ) of a server 4 are programs which make a computer 2 perform the above-mentioned procedure P2 with this operation gestalt.

[0040] Next, the detail of a procedure P2 is explained. First, it judges whether the measurement initiation carbon button 33 was turned on in the screen of the display 23 of drawing 4 (step S34). If the measurement initiation carbon button 33 is turned on (step S34; YES), measurement by the measuring instrument 1 would be performed (step S35), and measurement would be completed normally, or (didn't the error etc. occur?) it will be judged whether it is no (step S36). When measurement is not completed normally, it returns to (step S36; NO) and step S34, and measures again. If measurement is completed normally (step S36; YES), the data-processing section 22 will connect a computer 2 to a server 4 through the communications control section 26 and the Internet 3 (step S37). And the signal showing measurement by the measuring instrument 1 having been completed is transmitted to a server 4 from a computer 2 (step S38).

[0041] In a server 4, if the above-mentioned measurement terminate signal is received (step S43), the IP address included in the measurement terminate signal which received will be read, and a user will be specified with reference to the user table 45 (step S44). And the account data of the accounting data table 46 classified by user is incremented and updated (step S45).

[0042] On the other hand, in a computer 2 side, after transmission of the measurement terminate signal of step S38 is completed, the data-processing section 22 ends connection between a computer 2 and the Internet 3 (step S39). A computer 2 is separated from a server 4 by this. Then, the data-processing section 22 performs data processing based on the measurement data obtained at step S35, and displays a measurement result on a display 23 like drawing 4 (step S40).

[0043] Next, it judges whether the application program for measurement is ended like the case of drawing 9 (step S41). Actuation will be ended if actuation of program termination is performed (step S41; YES). If it judges whether the measurement initiation carbon button 33 was turned on if actuation of program termination was not performed (step S41; NO) (step S42) and the measurement initiation carbon button 33 is not turned on, either (step S42; NO), it returns to step S41 and waits for termination of a program.

[0044] Moreover, if it will return to step S35 and measurement will be performed, if the measurement initiation carbon button 33 is turned on (step S42; YES), and measurement is completed normally (step S36; YES), a computer 2 will be connected to a server 4 (step S37), and the 2nd measurement terminate signal will be transmitted to a server 4 (step S38). In a server 4, the above-mentioned measurement terminate signal is received (step S43), an IP address is read, a user is specified from the user table 45 (step S44), and the account data of the accounting data table 46 classified by user is incremented and updated after that (step S45). Thus, whenever it receives a measurement terminate signal from a computer 2, the increment of the accounting data table 46 classified by user is carried out. In a computer 2 side, after transmission of a signal is completed, connection between a computer 2 and the Internet 3 is ended (step S39), and the actuation mentioned above is repeated henceforth.

[0045] In the example of drawing 10, a computer 2 is connected to a server 4 as mentioned above at the time of measurement termination of a measuring instrument 1, and a measurement terminate signal is transmitted to a server 4 from a computer 2. And in the server 4, this signal was received and the accounting data table 46 classified by user is updated. Therefore, whenever a measuring instrument 1 is used, a measurement terminate signal will be transmitted to a server 4, and the increment of the accounting data table 46 classified by user is carried out every [ 1 ] to one use of a measuring instrument 1. For this reason, the frame charged turns into the amount of money according to the use count of a measuring instrument. Moreover, since the signal for accounting is transmitted to a server after it is checked that measurement has been completed normally, even when measurement goes wrong, the fault that accounting is carried out can be avoided.

[0046] Drawing 11 is a flow chart which shows other operation gestalten of this invention, and is an example which performs accounting after a measurement result display. Steps S51-S53 are equivalent to steps S1-S3 of drawing 8, respectively, and steps S54-S62 support step S4 of drawing 8. Moreover, steps S63-S65 are equivalent to steps S5-S7 of drawing 8, respectively. Hereafter, actuation is explained with reference to drawing 11.

[0047] If the power source of a measuring instrument 1 is turned on (step S51) and the power source of a

computer 2 is turned on (step S52), the application program 41 for measurement stored in hard disk 24a will be started (step S53). A screen as shown by drawing 4 is displayed on the display 23 of a computer 2 by the startup of this program 41 (however, data un-displaying).

[0048] Then, a series of procedures P3 which consist of steps S54-S62 are performed. This procedure P3 is the contents of the application program 41 for measurement, and hard disk 24a ( drawing 5 (a) ) mentioned above, a record medium 27 ( drawing 6 ), and the application program 41 for measurement recorded on file 4a ( drawing 7 ) of a server 4 are programs which make a computer 2 perform the above-mentioned procedure P3 with this operation gestalt.

[0049] Next, the detail of a procedure P3 is explained. First, it judges whether the measurement initiation carbon button 33 was turned on in the screen of the display 23 of drawing 4 (step S54). If the measurement initiation carbon button 33 is turned on (step S54; YES), measurement by the measuring instrument 1 will be performed (step S55), and it will be judged whether measurement was completed normally (step S56). When measurement is not completed normally, it returns to (step S56; NO) and step S54, and measures again. If measurement is completed normally (step S56; YES), the data-processing section 22 will perform data processing based on the measurement data obtained at step S55, and will display a measurement result on a display 23 like drawing 4 (step S57).

[0050] Then, the data-processing section 22 connects a computer 2 to a server 4 through the communications control section 26 and the Internet 3 (step S58). And the signal showing the display of the measurement result by the measuring instrument 1 having been completed is transmitted to a server 4 from a computer 2 (step S59).

[0051] In a server 4, if the above-mentioned completion signal of a display is received (step S63), the IP address included in the measurement terminate signal which received will be read, and a user will be specified with reference to the user table 45 (step S64). And the account data of the accounting data table 46 classified by user is incremented and updated (step S65).

[0052] On the other hand, in a computer 2 side, after transmission of the completion signal of a display of step S59 is completed, the data-processing section 22 ends connection between a computer 2 and the Internet 3 (step S60). A computer 2 is separated from a server 4 by this.

[0053] Next, it judges whether the application program for measurement is ended like the case of drawing 9 (step S61). Actuation will be ended if actuation of program termination is performed (step S61; YES). If it judges whether the measurement initiation carbon button 33 was turned on if actuation of program termination was not performed (step S61; NO) (step S62) and the measurement initiation carbon button 33 is not turned on, either (step S62; NO), it returns to step S61 and waits for termination of a program.

[0054] Moreover, if it will return to step S55 and measurement will be performed, if the measurement initiation carbon button 33 is turned on (step S62; YES), and measurement is completed normally (step S56; YES), a measurement result will be displayed on a display 23 (step S57). Then, a computer 2 is connected to a server 4 (step S58), and the 2nd completion signal of a display is transmitted to a server 4 (step S59). In a server 4, the above-mentioned measurement terminate signal is received (step S63), an IP address is read, a user is specified from the user table 45 (step S64), and the account data of the accounting data table 46 classified by user is incremented and updated after that (step S65). Thus, whenever it receives the completion signal of a display from a computer 2, the increment of the accounting data table 46 classified by user is carried out. In a computer 2 side, after transmission of the completion signal of a display of step S59 is completed, connection between a computer 2 and the Internet 3 is ended (step S60), and the actuation mentioned above is repeated henceforth.

[0055] After a measurement result is displayed in the example of drawing 11 as mentioned above, a computer 2 is connected to a server 4, and the completion signal of a display is transmitted to a server 4 from a computer 2. And in the server 4, this signal was received and the accounting data table 46 classified by user is updated. Therefore, whenever a measuring instrument 1 is used, the completion signal of a display will be transmitted to a server 4, and the increment of the accounting data table 46 classified by user is carried out every [ 1 ] to one use of a measuring instrument 1. For this reason, the frame charged turns into the amount of money according to the use count of a measuring instrument.

Moreover, since the signal for accounting is transmitted to a server after measurement is completed normally and a measurement result is displayed, even when measurement does not go wrong or a measurement result is not displayed, the fault that accounting is carried out can be avoided.

[0056] Drawing 12 is a flow chart which shows other operation gestalten of this invention, and when performing measurement continuously, whenever measurement is completed each time, it is an example which performs accounting. Steps S71-S73 are equivalent to steps S1-S3 of drawing 8, respectively, and steps S74-S81 support step S4 of drawing 8. Moreover, steps S82-S84 are equivalent to steps S5-S7 of drawing 8, respectively. Hereafter, actuation is explained with reference to drawing 12.

[0057] If the power source of a measuring instrument 1 is turned on (step S71) and the power source of a computer 2 is turned on (step S72), the application program 41 for measurement stored in hard disk 24a will be started (step S73). A screen as shown by drawing 4 is displayed on the display 23 of a computer 2 by the startup of this program 41 (however, data un-displaying).

[0058] Then, a series of procedures P4 which consist of steps S74-S81 are performed. This procedure P4 is the contents of the application program 41 for measurement, and hard disk 24a (drawing 5 (a)) mentioned above, a record medium 27 (drawing 6), and the application program 41 for measurement recorded on file 4a (drawing 7) of a server 4 are programs which make a computer 2 perform the above-mentioned procedure P4 with this operation gestalt.

[0059] Next, the detail of a procedure P4 is explained. First, it judges whether the continuous measurement carbon button 34 was turned on in the screen of the display 23 of drawing 4 (step S74). If the continuous measurement carbon button 34 is turned on (step S74; YES), the first measurement by the measuring instrument 1 will be performed (step S75), and it will be judged whether measurement was completed normally (step S76). When measurement is not completed normally, it returns to (step S76; NO) and step S75, and measures again. If measurement is completed normally (step S76; YES), the data-processing section 22 will connect a computer 2 to a server 4 through the communications control section 26 and the Internet 3 (step S77). And the signal showing the 1st measurement by the measuring instrument 1 having been completed is transmitted to a server 4 from a computer 2 (step S78).

[0060] In a server 4, if the above-mentioned measurement terminate signal is received (step S82), the IP address included in the measurement terminate signal which received will be read, and a user will be specified with reference to the user table 45 (step S83). And the account data of the accounting data table 46 classified by user is incremented and updated (step S84).

[0061] On the other hand, in a computer 2 side, after transmission of the measurement terminate signal of step S78 is completed, the data-processing section 22 ends connection between a computer 2 and the Internet 3 (step S79). A computer 2 is separated from a server 4 by this. Then, the data-processing section 22 performs data processing based on the measurement data obtained at step S75, and displays a measurement result on a display 23 like drawing 4 (step S80).

[0062] Next, only the count of predetermined decided beforehand judges whether measurement was performed or not (step S81). If count activation of predetermined of the measurement is carried out (step S81; YES), a program will be ended and actuation will be finished. If a measurement count does not fulfill the count of predetermined (step S81; NO), it returns to step S75, the next measurement is performed and measurement is completed normally (step S76; YES), a computer 2 will be connected to a server 4 (step S77), and the 2nd measurement terminate signal will be transmitted to a server 4 (step S78). In a server 4, the above-mentioned measurement terminate signal is received (step S82), an IP address is read, a user is specified from the user table 45 (step S83), and the account data of the accounting data table 46 classified by user is incremented and updated after that (step S84). Thus, whenever it receives a measurement terminate signal from a computer 2, the increment of the accounting data table 46 classified by user is carried out. In a computer 2 side, after transmission of a signal is completed, connection between a computer 2 and the Internet 3 is ended (step S79), and the actuation mentioned above is repeated henceforth.

[0063] When measuring by carrying out count continuation of predetermined in the example of drawing 12 as mentioned above, whenever measurement of each time is completed, a computer 2 is connected to a server 4, and a measurement terminate signal is transmitted to a server 4 from a computer 2. And in the

server 4, this signal was received and the accounting data table 46 classified by user is updated. Therefore, whenever a measuring instrument 1 measures, a measurement terminate signal will be transmitted to a server 4, and the increment of the accounting data table 46 classified by user is carried out by the count of continuous duty of a measuring instrument 1. For this reason, the frame charged turns into the amount of money according to the count of continuous duty of a measuring instrument. Moreover, since the signal for accounting is transmitted to a server after it is checked that measurement has been completed normally, even when measurement goes wrong, the fault that accounting is carried out can be avoided.

[0064] Drawing 13 is a flow chart which shows other operation gestalten of this invention, and when performing measurement continuously, whenever a measurement result is displayed each time, it is an example which performs accounting. Steps S91-S93 are equivalent to steps S1-S3 of drawing 8, respectively, and steps S94-S101 support step S4 of drawing 8. Moreover, steps S102-S104 are equivalent to steps S5-S7 of drawing 8, respectively. Hereafter, actuation is explained with reference to drawing 13.

[0065] If the power source of a measuring instrument 1 is turned on (step S91) and the power source of a computer 2 is turned on (step S92), the application program 41 for measurement stored in hard disk 24a will be started (step S93). A screen as shown by drawing 4 is displayed on the display 23 of a computer 2 by the startup of this program 41 (however, data un-displaying).

[0066] Then, a series of procedures P5 which consist of steps S94-S101 are performed. This procedure P5 is the contents of the application program 41 for measurement, and hard disk 24a (drawing 5 (a)) mentioned above, a record medium 27 (drawing 6), and the application program 41 for measurement recorded on file 4a (drawing 7) of a server 4 are programs which make a computer 2 perform the above-mentioned procedure P5 with this operation gestalt.

[0067] Next, the detail of a procedure P5 is explained. First, it judges whether the continuous measurement carbon button 34 was turned on in the screen of the display 23 of drawing 4 (step S94). If the continuous measurement carbon button 34 is turned on (step S94; YES), the first measurement by the measuring instrument 1 will be performed (step S95), and it will be judged whether measurement was completed normally (step S96). When measurement is not completed normally, it returns to (step S96; NO) and step S95, and measures again. If measurement is completed normally (step S96; YES), the data-processing section 22 will perform data processing based on the measurement data obtained at step S95, and will display a measurement result on a display 23 like drawing 4 (step S97).

[0068] Then, the data-processing section 22 connects a computer 2 to a server 4 through the communications control section 26 and the Internet 3 (step S98). And the signal showing the display of the 1st measurement result by the measuring instrument 1 having been completed is transmitted to a server 4 from a computer 2 (step S99).

[0069] In a server 4, if the above-mentioned completion signal of a display is received (step S102), the IP address included in the input signal will be read, and a user will be specified with reference to the user table 45 (step S103). And the account data of the accounting data table 46 classified by user is incremented and updated (step S104).

[0070] On the other hand, in a computer 2 side, after transmission of the completion signal of a display of step S99 is completed, the data-processing section 22 ends connection between a computer 2 and the Internet 3 (step S100). A computer 2 is separated from a server 4 by this.

[0071] Next, only the count of predetermined decided beforehand judges whether measurement was performed or not (step S101). If count activation of predetermined of the measurement is carried out (step S101; YES), a program will be ended and actuation will be finished. If a measurement count does not fulfill the count of predetermined (step S101; NO), it returns to step S95, the next measurement is performed and measurement is completed normally (step S96; YES), a measurement result will be displayed on a display 23 (step S97).

[0072] Then, a computer 2 is connected to a server 4 (step S98), and the 2nd completion signal of a display is transmitted to a server 4 (step S99). In a server 4, the above-mentioned completion signal of a display is received (step S102), an IP address is read, a user is specified from the user table 45 (step



S103), and the account data of the accounting data table 46 classified by user is incremented and updated after that (step S104). Thus, whenever it receives the completion signal of a display from a computer 2, the increment of the accounting data table 46 classified by user is carried out. In a computer 2 side, after transmission of a signal is completed, connection between a computer 2 and the Internet 3 is ended (step S100), and the actuation mentioned above is repeated henceforth.

[0073] When measuring by carrying out count continuation of predetermined in the example of drawing 13 as mentioned above, whenever the measurement result of each time is displayed, a computer 2 is connected to a server 4, and the completion signal of a display is transmitted to a server 4 from a computer 2. And in the server 4, this signal was received and the accounting data table 46 classified by user is updated. Therefore, whenever a measuring instrument 1 measures, the completion signal of a display will be transmitted to a server 4, and the increment of the accounting data table 46 classified by user is carried out by the count of continuous duty of a measuring instrument 1. For this reason, the frame charged turns into the amount of money according to the count of continuous duty of a measuring instrument. Moreover, since the signal for accounting is transmitted to a server after measurement is completed normally and a measurement result is displayed, even when measurement does not go wrong or a measurement result is not displayed, the fault that accounting is carried out can be avoided.

[0074] In the above operation gestalt, the function of the application program for accounting is included in the application program 41 for measurement. That is, although steps S15-S17 of drawing 9, steps S37-S39 of drawing 10, steps S58-S60 of drawing 11, steps S77-S79 of drawing 12, and steps S98-S100 of drawing 13 are the parts equipped with the function, the application program for accounting can also be considered as the program which became independent of the application program 41 for measurement.

[0075] Drawing 14 thru/or drawing 23 are the operation gestalten at the time of constituting the application program for accounting as an independent program. Drawing 14 is drawing having shown the contents of storage of the storage section 24 on the table, and corresponds with drawing 5. Drawing 14 (a) shows some contents of storage of hard disk 24a, and (b) shows some contents of storage of RAM24b, respectively. The OS program 40 for operating a computer 2, as shown in (a), the application program 41 for measurement for measuring using a measuring instrument 1, and the application program 42 for accounting are installed in hard disk 24a. On the other hand, the measurement data 43 measured by the measuring instrument 1 as shown in (b), the indicative data 44 displayed on a display 23 are temporarily stored in RAM24b.

[0076] The above-mentioned application program 41 for measurement and the application program 42 for accounting are installed using the record media 27, such as FD27a and CD-ROM27b, like the above. Drawing 15 is drawing having shown the contents of storage of a record medium 27 on the table, and the application program 41 for measurement and the application program 42 for accounting are stored. Here, although two programs 41 and 42 are stored in one record medium 27, only the application program 42 for accounting may be stored in one record medium 27 like drawing 16. In this case, what is necessary is to prepare independently the record medium 27 which stored the application program 41 for measurement, or just to download the application program 41 for measurement from a server 4. In addition, the point of install of the application program 42 for accounting is the same as a previous example, and it carries out by inserting a record medium 27 in the record-medium reader 25.

[0077] Moreover, the application program 42 for accounting is also downloadable from a server 4 through the Internet 3. Drawing 17 is drawing having shown some contents of storage of file 4a of the server 4 in this case on the table. The application program 41 for measurement, the application program 42 for accounting, the user table 45, the accounting data table 46 classified by user, etc. are stored in file 4a. By connecting a computer 2 to the Internet 3 through the communications control section 26, accessing to a server 4, and downloading the application program 42 for accounting with the application program 41 for measurement of file 4a, programs 41 and 42 are stored in the predetermined field of hard disk 24a, as drawing 14 (a) showed.

[0078] Moreover, only the application program 42 for accounting may be stored in file 4a of a server 4 like drawing 18. In this case, the application program 42 for accounting is downloaded through the

Internet 3, and the application program 41 for measurement is installed using a record medium 27.

[0079] Drawing 19 is a flow chart which shows the actuation at the time of using the above independent application programs 42 for accounting, and is the modification of drawing 9. Therefore, the same step number is given to the same processing step as drawing 9. Since processing of steps S11-S13 is the same as the case of drawing 9, explanation is omitted. Continuing step S14, S14a, and the procedure P10 which consists of S18-S21 are the contents of the application program 41 for measurement, and hard disk 24a (drawing 14 (a)) mentioned above, a record medium 27 (drawing 15), and the application program 41 for measurement recorded on file 4a (drawing 17) of a server 4 are programs which make a computer 2 perform the above-mentioned procedure P10 with this operation gestalt.

[0080] In a procedure P10, if it judges whether the measurement initiation carbon button 33 was first turned on in the screen of the display 23 of drawing 4 (step S14) and the measurement initiation carbon button 33 is turned on (step S14; YES), the application program 42 for accounting stored in hard disk 24a will be started (step S14a). And the procedure Q1 which consists of steps S15-S17 is performed. This procedure Q1 is the contents of the application program 42 for accounting, and hard disk 24a (drawing 14 (a)) mentioned above, a record medium 27 (drawing 15 and drawing 16), and the application program 42 for accounting recorded on file 4a (drawing 17 and drawing 18) of a server 4 are programs which make a computer 2 perform the above-mentioned procedure Q1 with this operation gestalt.

[0081] Processing of steps S15-S17 in a procedure Q1 is the same as processing of steps S15-S17 of drawing 9. That is, a computer 2 is connected to a server 4 through the communications control section 26 and the Internet 3 (step S15), and a measurement start signal is transmitted to a server 4 from a computer 2 (step S16). In a server 4, a measurement start signal is received (step S22), a user is specified from the IP address included in the input signal (step S23), and the account data of the accounting data table 46 classified by user is updated (step S24). The processing in the above server 4 is the same as the case of drawing 9.

[0082] In a computer 2 side, after transmission of the measurement start signal of step S16 is completed, the data-processing section 22 ends connection between a computer 2 and the Internet 3 (step S17). A computer 2 is separated from a server 4 by this, and ends activation of the application program 42 for accounting by it. After that, according to the application program 41 for measurement, measurement by the measuring instrument 1 is performed (step S18), and based on the measurement data, the data-processing section 22 performs data processing, and displays a measurement result on a display 23 like drawing 4 (step S19). About the actuation after step S20 and S21, since it is the same as the case of drawing 9, explanation is omitted.

[0083] Also in the example of the above drawing 19, whenever a measuring instrument 1 is used like drawing 9, a measurement start signal is transmitted to a server 4, and the frame charged turns into the amount of money according to the use count of a measuring instrument. Moreover, since measurement will not be started if it is not after connecting a computer 2 to a server 4 and transmitting a measurement start signal, positive accounting can be performed.

[0084] Drawing 20 is a flow chart which shows other operation gestalten, and is the modification of drawing 10. Therefore, the same step number is given to the same processing step as drawing 10. Since processing of steps S31-S33 is the same as the case of drawing 10, explanation is omitted. Continuing steps S34-S36, S36a, and the procedure P20 which consists of S40-S42 are the contents of the application program 41 for measurement, and hard disk 24a (drawing 14 (a)) mentioned above, a record medium 27 (drawing 15), and the application program 41 for measurement recorded on file 4a (drawing 17) of a server 4 are programs which make a computer 2 perform the above-mentioned procedure P20 with this operation gestalt.

[0085] In a procedure P20, if it judges whether the measurement initiation carbon button 33 was first turned on in the screen of the display 23 of drawing 4 (step S34) and the measurement initiation carbon button 33 is turned on (step S34; YES), measurement will be performed (step S35) and it will be judged whether measurement was completed normally (step S36). If measurement is completed normally (step S36; YES), the application program 42 for accounting stored in hard disk 24a will be started (step S36a).



And the procedure Q2 which consists of steps S37-S39 is performed. This procedure Q2 is the contents of the application program 42 for accounting, and hard disk 24a ( drawing 14 (a) ) mentioned above, a record medium 27 ( drawing 15 and drawing 16 ), and the application program 42 for accounting recorded on file 4a ( drawing 17 and drawing 18 ) of a server 4 are programs which make a computer 2 perform the above-mentioned procedure Q2 with this operation gestalt.

[0086] Since processing of steps S37-S39 in a procedure Q2 is the same as processing of steps S37-S39 of drawing 10 and processing of steps S43-S45 in a server 4 is the same as processing of steps S43-S45 of drawing 10 , explanation is omitted. After ending connection between a computer 2 and the Internet 3 at step S39, a computer 2 is separated from a server 4 and ends activation of the application program 42 for accounting. After that, according to the application program 41 for measurement, the data-processing section 22 processes measurement data, and displays a measurement result on a display 23 (step S40). About the actuation after step S41 and S42, since it is the same as the case of drawing 10 , explanation is omitted.

[0087] Also in the example of the above drawing 20 , whenever a measuring instrument 1 is used like drawing 10 , a measurement terminate signal is transmitted to a server 4, and the frame charged turns into the amount of money according to the use count of a measuring instrument. Moreover, since the program for accounting starts and a measurement terminate signal is transmitted to a server after it is checked that measurement has been completed normally, even when measurement goes wrong, the fault that accounting is carried out can be avoided.

[0088] Drawing 21 is a flow chart which shows other operation gestalten, and is the modification of drawing 11 . Therefore, the same step number is given to the same processing step as drawing 11 R> 1. Since processing of steps S51-S53 is the same as the case of drawing 11 , explanation is omitted. Continuing steps S54-S57, S57a, and the procedure P30 which consists of S61-S62 are the contents of the application program 41 for measurement, and hard disk 24a ( drawing 14 (a) ) mentioned above, a record medium 27 ( drawing 15 ), and the application program 41 for measurement recorded on file 4a ( drawing 17 ) of a server 4 are programs which make a computer 2 perform the above-mentioned procedure P30 with this operation gestalt.

[0089] In a procedure P30, if it judges whether the measurement initiation carbon button 33 was first turned on in the screen of the display 23 of drawing 4 (step S54) and the measurement initiation carbon button 33 is turned on (step S54; YES), measurement will be performed (step S55) and it will be judged whether measurement was completed normally (step S56). If measurement is completed normally (step S56; YES), a measurement result will be displayed on a display 23 (step S57), and the application program 42 for accounting stored in hard disk 24a will be started after that (step S57a). And the procedure Q3 which consists of steps S58-S60 is performed. This procedure Q3 is the contents of the application program 42 for accounting, and hard disk 24a ( drawing 14 (a) ) mentioned above, a record medium 27 ( drawing 15 and drawing 16 ), and the application program 42 for accounting recorded on file 4a ( drawing 17 and drawing 18 ) of a server 4 are programs which make a computer 2 perform the above-mentioned procedure Q3 with this operation gestalt.

[0090] Since processing of steps S58-S60 in a procedure Q3 is the same as processing of steps S58-S60 of drawing 11 and processing of steps S63-S65 in a server 4 is the same as processing of steps S63-S65 of drawing 11 , explanation is omitted. After ending connection between a computer 2 and the Internet 3 at step S60, a computer 2 is separated from a server 4 and ends activation of the application program 42 for accounting. Although it moves to the actuation after step S61 after that according to the application program 41 for measurement, since this actuation is the same as the case of drawing 11 , explanation is omitted.

[0091] Also in the example of the above drawing 21 , whenever a measuring instrument 1 is used like drawing 11 , the completion signal of a display is transmitted to a server 4, and the frame charged turns into the amount of money according to the use count of a measuring instrument. Moreover, since the program for accounting starts and the completion signal of a display is transmitted to a server after measurement is completed normally and a measurement result is displayed, even when measurement does not go wrong or a measurement result is not displayed, the fault that accounting is carried out can

be avoided.

[0092] Drawing 22 is a flow chart which shows other operation gestalten, and is the modification of drawing 12. Therefore, the same step number is given to the same processing step as drawing 12 R> 2. Since processing of steps S71-S73 is the same as the case of drawing 12, explanation is omitted. Continuing steps S74-S76, S76a, and the procedure P40 which consists of S80-S81 are the contents of the application program 41 for measurement, and hard disk 24a ( drawing 14 (a)) mentioned above, a record medium 27 ( drawing 15 ), and the application program 41 for measurement recorded on file 4a ( drawing 17 ) of a server 4 are programs which make a computer 2 perform the above-mentioned procedure P40 with this operation gestalt.

[0093] In a procedure P40, if it judges whether the continuous measurement carbon button 34 was first turned on in the screen of the display 23 of drawing 4 </A> (step S74) and the continuous measurement carbon button 34 is turned on (step S74; YES), measurement will be performed (step S75) and it will be judged whether measurement was completed normally (step S76). If measurement is completed normally (step S76; YES), the application program 42 for accounting stored in hard disk 24a will be started (step S76a). And the procedure Q4 which consists of steps S77-S79 is performed. This procedure Q4 is the contents of the application program 42 for accounting, and hard disk 24a ( drawing 14 (a)) mentioned above, a record medium 27 ( drawing 15 and drawing 16 ), and the application program 42 for accounting recorded on file 4a ( drawing 17 and drawing 18 ) of a server 4 are programs which make a computer 2 perform the above-mentioned procedure Q4 with this operation gestalt.

[0094] Since processing of steps S77-S79 in a procedure Q4 is the same as processing of steps S77-S79 of drawing 12 and processing of steps S82-S84 in a server 4 is the same as processing of steps S82-S84 of drawing 12, explanation is omitted. After ending connection between a computer 2 and the Internet 3 at step S79, a computer 2 is separated from a server 4 and ends activation of the application program 42 for accounting. Although a measurement result is displayed on a display 23 (step S80) and it moves to step S81 after that according to the application program 41 for measurement, since the actuation after this is the same as the case of drawing 12 R> 2, explanation is omitted.

[0095] Also in the example of the above drawing 22, whenever a measuring instrument 1 is used like drawing 12, a measurement terminate signal is transmitted to a server 4, and the frame charged turns into the amount of money according to the count of continuous duty of a measuring instrument. Moreover, since the program for accounting starts and a measurement terminate signal is transmitted to a server after it is checked that measurement has been completed normally each time, even when measurement goes wrong, the fault that accounting is carried out can be avoided.

[0096] Drawing 23 is a flow chart which shows other operation gestalten, and is the modification of drawing 13. Therefore, the same step number is given to the same processing step as drawing 13 R> 3. Since processing of steps S91-S93 is the same as the case of drawing 13, explanation is omitted. Continuing steps S94-S97, S97a, and the procedure P50 which consists of S101 are the contents of the application program 41 for measurement, and hard disk 24a ( drawing 14 (a)) mentioned above, a record medium 27 ( drawing 15 ), and the application program 41 for measurement recorded on file 4a ( drawing 17 ) of a server 4 are programs which make a computer 2 perform the above-mentioned procedure P50 with this operation gestalt.

[0097] In a procedure P50, if it judges whether the continuous measurement carbon button 34 was first turned on in the screen of the display 23 of drawing 4 (step S94) and the continuous measurement carbon button 34 is turned on (step S94; YES), measurement will be performed (step S95) and it will be judged whether measurement was completed normally (step S96). If measurement is completed normally (step S96; YES), a measurement result will be displayed on a display 23 (step S97), and the application program 42 for accounting stored in hard disk 24a will be started after that (step S97a). And the procedure Q5 which consists of steps S98-S100 is performed. This procedure Q5 is the contents of the application program 42 for accounting, and hard disk 24a ( drawing 14 (a)) mentioned above, a record medium 27 ( drawing 15 and drawing 16 ), and the application program 42 for accounting recorded on file 4a ( drawing 17 and drawing 18 ) of a server 4 are programs which make a computer 2 perform the above-mentioned procedure Q5 with this operation gestalt.

[0098] Since processing of steps S98-S100 in a procedure Q5 is the same as processing of steps S98-S100 of drawing 13 and processing of steps S102-S104 in a server 4 is the same as processing of steps S102-S104 of drawing 13, explanation is omitted. After ending connection between a computer 2 and the Internet 3 at step S100, a computer 2 is separated from a server 4 and ends activation of the application program 42 for accounting. Although step S101 is performed after that according to the application program 41 for measurement, since the actuation after this is the same as the case of drawing 13, explanation is omitted.

[0099] Also in the example of the above drawing 23, whenever a measuring instrument 1 is used like drawing 13, the completion signal of a display is transmitted to a server 4, and the frame charged turns into the amount of money according to the count of continuous duty of a measuring instrument. Moreover, since the program for accounting starts and the completion signal of a display is transmitted to a server after measurement is completed normally each time and a measurement result is displayed, even when measurement does not go wrong or a measurement result is not displayed, the fault that accounting is carried out can be avoided.

[0100] In each above operation gestalt, although accounting was performed based on the use count of a measuring instrument 1, depending on the class of measuring instrument, accounting can also be performed based on a time. Generally a measuring instrument like an elemental-analysis meter has the long measuring time, and when sample analysis is successful at once, there are, and they redo measurement in many cases. [ few ] For this reason, if it charges based on a time, it must work in a hurry, caring about time amount, and accounting of a time amount system will not get used. On the other hand, it is more convenient to adopt accounting according to the measuring time, since accounting which such a situation does not have and is proportional to the amount used by accounting according to a measurement count conversely is not performed in the measuring instrument which is mainly concerned with observation like a microscope (for example, X-ray microscope).

[0101] Drawing 24 is a flow chart which shows the operation gestalt in this case, and is the modification of drawing 10. Therefore, the same step number is given to the same processing step as drawing 10. In drawing 24, procedure P2a is the contents of the application program 41 for measurement, and if the measurement initiation carbon button 33 is turned on (step S34; YES), while measurement will be performed, counting of the time amount from measurement initiation is carried out (step S35a). And if measurement is completed normally (step S36; YES) and a computer 2 is connected to a server 4 (step S37), the data of the time amount from measurement initiation to measurement termination, i.e., the time of a measuring instrument 1, will be sent to a server 4 with a measurement terminate signal (step S38a). In a server 4, after receiving a measurement terminate signal and time data (step S43a) and specifying a user (step S44), a user's account data is updated based on a time (step S45). In this case, the accumulation value of the time of the measuring instrument 1 in a predetermined period is recorded on the accounting data table 46 classified by user. Since it is the same as the case of drawing 10 about other steps, explanation is omitted. In addition, although shown as a modification of drawing 10 here, in drawing 11 - drawing 13 and drawing 20 - drawing 23, it is also possible to adopt accounting by the time.

[0102] Although the above operation gestalt showed the example which installs in the storage section 24 (hard disk 24a) of a computer 22 the application program 41 for measurement stored in the record medium 27 or the server 4, the application program 41 for measurement is given to a measuring instrument 1 side, and it may be made to perform by computer 2 by reading this. Drawing 25 is an example in this case, and the application program 41 for measurement is stored in storage section (memory) 1a of a measuring instrument 1. In addition to this, measurement data 43, an indicative data 44, etc. are memorized by storage section 1a.

[0103] Moreover, although the computer 2 which became independent as a control unit was used in drawing 1, the function of a computer 2 is included in a measuring instrument 1, and you may make it a measuring instrument make a control unit serve a double purpose. Drawing 26 shows the example in this case, and a system consists of a measuring instrument 51 and a server 53 connected to this measuring instrument 51 through a circuit 52. A circuit 52 may be a dedicated line and may be the Internet.

[0104] Drawing 27 is the block diagram showing the configuration of a measuring instrument 51. 60 is a test section which measures the concentration of carbon or sulfur, and is equipped with the same configuration as what was shown in drawing 2. The input section in which 61 includes a manual operation button, a switch, etc., and 62 are the data-processing sections which perform data processing based on the signal from a test section 60 and the input section 61, and it consists of CPUs. 63 is a display which displays the result calculated in the data-processing section 62, and consists of CRT, a liquid crystal display, etc. 64 is the storage section which memorizes the analytical data calculated by the application program 41 for measurement mentioned above, the application program 42 for accounting, and the data-processing section 62, and consists of memory, such as RAM and ROM. 65 is a record-medium reader and consists of a FD driver, a CD-ROM driver, etc. 66 is the communications control section for making connection with a circuit 52, and consists of modems. 67 is the record medium which recorded the application program for measurement, and the application program for accounting, and consists of FD67a, CD-ROM67b, etc. 68 is the printing section for printing analytical data in a form.

[0105] The configuration of a server 53 is the same as the server 4 of drawing 1, and since it is fundamentally the same, explanation is abbreviated to the case of drawing 1 which also mentioned actuation of the system of drawing 26 above. Thus, by including the function as a control unit in a measuring instrument 51, a computer becomes unnecessary and a system configuration can be simplified.

[0106] In this invention, although mentioned with the above-mentioned operation gestalt as a record medium, various kinds of record media, such as an MO disk (magneto-optic disk), and CD-R, a memory card, can be used for others. Furthermore, it can be aimed at the measuring instrument with which a measuring instrument is also used for various applications, such as not only the analysis apparatus of an element but a particle-size-distribution meter.

[0107]

[Effect of the Invention] According to this invention, since accounting is carried out according to the use count or time of a measuring instrument, the rational accounting system adapted to the use actual condition is realized, and there is effectiveness which can mitigate a user's cost burden.

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**TECHNICAL FIELD**

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[Field of the Invention] This invention relates to the accounting system and the accounting approach of performing accounting according to the use count, the record medium which recorded the program for accounting, a measuring instrument, and a server, when the measuring instrument for measuring the carbon for example, in a metal sample and sulphuric concentration is lent to a user by lease or rental.

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**PRIOR ART**

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[Description of the Prior Art] Although the user is purchasing and using the measuring instrument from the manufacturer conventionally, generally a measuring instrument does not have many which have the operating frequency where there are many expensive things and it is comparatively [ the ] low, either. Therefore, purchasing such a measuring instrument has the problem that cost starts too much for a user. Then, a measuring instrument is lent out to a user by lease or rental, and the system which collects the dues is put in practical use. According to this, the burden of the initial investment accompanying the measuring instrument purchase by the side of a user is mitigated.

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**EFFECT OF THE INVENTION**

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[Effect of the Invention] According to this invention, since accounting is carried out according to the use count or time of a measuring instrument, the rational accounting system adapted to the use actual condition is realized, and there is effectiveness which can mitigate a user's cost burden.

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TECHNICAL PROBLEM

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[Problem(s) to be Solved by the Invention] However, in the system of the present lease (rental), since the fixed accounting system by which the rental revenue of the fixed amount is charged every month was usually adopted, even if the operating frequency of a measuring instrument was low, accounting of the fixed amount will be carried out, and it had led to the cost rise by the side of a user as a result. [0004] This invention makes it the technical problem to control the cost burden of the user in the case of using a measuring instrument by lease or rental in view of the above points to the minimum.

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MEANS

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[Means for Solving the Problem] In order to solve the above-mentioned technical problem, the accounting system concerning this invention A measuring instrument and the management equipment which manages the account data for charging to use of this measuring instrument, He has the control unit which notifies that the measuring instrument concerned was used at the specific time from initiation of a measuring instrument of operation to termination of operation to said management equipment, and is trying for said management equipment to generate the account data according to the use count of a measuring instrument based on the notice from said control unit.

[0006] Here, a control unit is typically realized as a computer connected to the measuring instrument, and management equipment is typically realized as a server. And a computer is connected with a server through a network like the Internet while connecting with a measuring instrument. A server is equipped with a user table and the accounting data table classified by user, whenever it receives the notice of the measuring instrument having been used from a computer, specifies a user with reference to a user table, and updates the account data of the accounting data table classified by user corresponding to the user concerned.

[0007] Moreover, the computer by which the accounting approach concerning this invention was connected to a measuring instrument and this measuring instrument, It is the accounting approach charged to use of a measuring instrument by the server connected with this computer through the network. The step which connects a computer to a server at the specific time from initiation of a measuring instrument of operation to termination of operation, It has from a computer the step which transmits the signal showing the measuring instrument having been used to the server, and the step which generates the account data according to the use count of a measuring instrument in a server based on said signal.

[0008] Since account data will be generated whenever a measuring instrument is used by doing in this way, and accounting according to the use count of a measuring instrument is carried out, the frame which will be charged if operating frequency is low becomes low, and the frame which will be charged if operating frequency is high also becomes high. Therefore, it becomes possible to perform rational accounting adapted to the actual condition of use by the user side.

[0009] As timing which transmits the signal showing the measuring instrument having been used to a server, you may be at the measurement initiation time and may be at the measurement termination time. Or after replacing with these and displaying a measurement result, you may be. Moreover, what is necessary is just to transmit a signal to a server, when measuring by carrying out count continuation of predetermined whenever measurement in each time is completed, or whenever the display of the measurement result in each time is completed.

[0010] Moreover, there are two classes of record media concerning this invention. One is the record medium which recorded the independent program for accounting, and the program which makes a computer perform the processing which connects a computer to a server through a network at the specific time from initiation of a measuring instrument of operation to termination of operation, the processing which transmits the signal showing the measuring instrument having been used from a

computer to a server, and the processing which end connection between a computer and a server records.

[0011] The processing which another is [ processing ] the record medium which incorporated the function of the program for accounting into the program for measurement, and makes a measuring instrument perform measurement, The processing which displays the measured result, and the processing which connects a computer to a server through a network at the specific time from initiation of a measuring instrument of operation to termination of operation, The program which makes a computer perform processing which transmits the signal showing the measuring instrument having been used, and processing which ends connection between a computer and a server is recorded on a server from a computer.

[0012] In this invention, the record medium which recorded such a program begins portable mold media, such as a floppy disk and CD-ROM, and takes various gestalten like the file on the hard disk built in a computer, semiconductor memory, or a server. Moreover, a program may be given to a computer, and not only a server but the measuring instrument itself.

[0013] Moreover, although there are some for which the measurement itself does not depend for on a count depending on the class of measuring instrument, but it depends on a time, for example like a microscope, about such a measuring instrument, it replaces with a use count and may be made to perform accounting based on a time. Furthermore, a control unit may be made to use also [ measuring instrument ] in this invention.

[0014]

[Embodiment of the Invention] Hereafter, it explains about the operation gestalt of this invention, referring to drawing. Drawing 1 is the system configuration Fig. showing an example of the accounting system concerning this invention. In drawing, 1 is a measuring instrument, for example, is equipment which analyzes carbon and sulfur in steel quantitatively. 2 is computers, such as a personal computer (PC) connected with the measuring instrument 1, and constitutes the control unit of this invention. 3 is the Internet to which a computer 2 is connected, and constitutes the network of this invention. 4 is a server connected to the Internet 4, and constitutes the management equipment of this invention.

[0015] Drawing 2 is the block diagram showing the configuration of a measuring instrument 1. Measuring instruments 1 are carbon / sulfur analysis apparatus as mentioned above, and consist of the RF incinerator 11, a dust filter 12, a dehydrator 13, and an infrared detector 14. an oxygen air current with this well-known analysis apparatus -- the crown -- the concentration of the carbon contained in a sample or sulfur is measured using a cycle heating combustion method and an infrared absorption method. That is, from the oxygen cylinder which is not illustrated, oxygen is supplied to the high frequency incinerator 11, and samples, such as steel, are burned in the high frequency incinerator 11 in it. The dust contained in the gas which occurs at this time is removed by the dust filter 12, and the moisture in gas is removed by the dehydrator 13. And CO, CO<sub>2</sub>, and SO<sub>2</sub> which are contained in combustion gas are detected by the infrared detector 14, and this detection output is inputted into a computer 2. A computer 2 performs data processing based on the above-mentioned output, calculates the concentration of each element, and displays the data.

[0016] Drawing 3 is the block diagram showing the hardware configuration of a computer 2. 21 is the input section which performs a predetermined entry of data, selection of a menu, etc., and consists of input units, such as a keyboard and a mouse. 22 is the data-processing section which performs data processing based on the signal from a measuring instrument 1 and the input section 21, and consists of CPUs. 23 is a display which displays the result calculated in the data-processing section 22, and consists of CRT, a liquid crystal display, etc.

[0017] 24 is the storage section which memorizes a program required for actuation of a computer 2, the analytical data calculated by the data-processing section 22, and consists of RAM, a ROM, a hard disk, etc. 25 is a record-medium reader, for example, consists of a floppy (trademark) disk driver, a CD-ROM driver, etc. 26 is the communications control section for making connection with the Internet, and consists of modems.

[0018] 27 is the record medium which recorded the application program for measurement, and the

application program for accounting, for example, consists of floppy disk (it is described as Following FD) 27a, CD-ROM27b, etc. 28 is a printer by which external is carried out to a computer 2, and is for printing analytical data in a form.

[0019] Drawing 4 shows an example of the display screen of a display 23. The field which displays numerically the analysis result of the concentration value of the carbon which contains 30 in the sample, and sulfur, the field where 31 displays the analyzed data for every sample numerically, and 32 are fields which display carbon / sulfur extract gas curve, a plate current value, etc. under analysis in a graph. Moreover, down the screen, the icon of the measurement initiation carbon button 33 and the continuous measurement carbon button 34 is prepared.

[0020] Drawing 5 is drawing having shown the contents of storage of the storage section 24 on the table. (a) shows some contents of storage of hard disk 24a, and (b) shows some contents of storage of RAM24b, respectively. The OS (Operating System) program 40 for operating a computer 2, as shown in (a), and the application program 41 for measurement for measuring using a measuring instrument 1 are installed in hard disk 24a. The function of the application program for accounting mentioned later is included in the application program 41 for measurement here. This hard disk 24a also makes 1 operation gestalt of the record medium in this invention. Moreover, although illustration is omitted, the field for saving the analytical data calculated by the data-processing section 22 is also established in hard disk 24a. On the other hand, the measurement data 43 measured by the measuring instrument 1 as shown in (b), the indicative data 44 displayed on a display 23 are temporarily stored in RAM24b.

[0021] The above-mentioned application program 41 for measurement is installed using the record media 27, such as the above-mentioned FD27a and CD-ROM27b. Drawing 6 is drawing having shown the contents of storage of a record medium 27 on the table, and the application program 41 for measurement is stored. By inserting a record medium 27 in the record-medium reader 25, and performing install actuation, the application program 41 for measurement is stored in the predetermined field of hard disk 24a, as drawing 5 (a) showed.

[0022] Moreover, the application program 41 for measurement is also downloadable from a server 4 through the Internet 3 ( drawing 1 ). Drawing 7 is drawing having shown some contents of storage of file 4a of a server 4 on the table. The application program 41 for measurement, the user table 45 which recorded the user who uses a measuring instrument, the accounting data table 46 classified by user which recorded the account data for every user are stored in file 4a. File 4a of this server 4 also makes 1 operation gestalt of the record medium in this invention. By connecting a computer 2 to the Internet 3 through the communications control section 26, accessing to a server 4, and downloading the application program 41 for measurement of file 4a, a program 41 is stored in the predetermined field of hard disk 24a, as drawing 5 (a) showed.

[0023] Drawing 8 is the outline flowchart which showed a series of actuation of the accounting system which consists of the above configuration, and drawing 9 thru/or drawing 13 are the detail flowchart. First, an outline of operation is explained according to the flow chart of drawing 8 . In drawing 8 , step S1 - S4 are processings which the computer 2 by the side of a user (PC) performs, and steps S5-S7 are processings which a server 4 performs. If the power source of a measuring instrument 1 is turned on (step S1) and the power source of a computer 2 is turned on (step S2), the application program 41 for measurement will be started with the OS program 40 stored in hard disk 24a (step S3).

[0024] Then, while measurement by the measuring instrument 1 is performed according to the above-mentioned application program 41 for measurement, processing for accounting is performed (step S4). Although later mentioned about the detail of this step S4, in step S4, a signal is transmitted to a server 4 from a computer 2 at the specific time from measurement actuation initiation to termination of operation, and it is notified to a server 4 that the measuring instrument 1 was used by this signal.

[0025] In a server 4, if said signal is received from a computer 2 (step S5), IP (Internet Protocol) address included in this signal will be read, and a user will be specified with reference to the user table 45 ( drawing 7 ) of file 4a (step S6). In addition, a user's specific approach is not restricted to an IP address, may include a user's identifier, a name, etc. as text data in the signal which notifies that the measuring instrument from a computer 2 was used, and may adopt the approach of reading this by the server 4 and

identifying a user. Also in the following operation gestalten, it is the same.

[0026] Then, the account data of the user concerned in the accounting data table 46 classified by user of file 4a is updated (step S7). The accounting data table 46 classified by user is recorded as an accumulation value of the use count of the measuring instrument 1 in a predetermined period, and whenever a measuring instrument 1 is used once, an increment is carried out every [ 1 ] and it is updated.

[0027] In addition, a manufacturer may lease a measuring instrument 1 to a direct user (rental), and it may be leased through a leasing company etc. (rental). Therefore, the owner of a server 4 is a manufacturer or a leasing company. In a manufacturer or a leasing company, measuring instrument dues are calculated based on the accounting data table 46 classified by user accumulated in the server 4, and a user is asked for dues. The dues charged serve as a frame according to the use count of the measuring instrument 1 by the side of a user.

[0028] Drawing 9 is the flow chart which showed drawing 8 more to the detail, and is an example which performs accounting at the time of measurement initiation. Steps S11-S13 are equivalent to steps S1-S3 of drawing 8, respectively, and steps S14-S21 support step S4 of drawing 8. Moreover, steps S22-S24 are equivalent to steps S5-S7 of drawing 8, respectively. Hereafter, actuation is explained with reference to drawing 9.

[0029] If the power source of a measuring instrument 1 is turned on (step S11) and the power source of a computer 2 is turned on (step S12), the application program 41 for measurement stored in hard disk 24a will be started (step S13). A screen as shown by drawing 4 is displayed on the display 23 of a computer 2 by the startup of this program 41 (however, data un-displaying).

[0030] Then, a series of procedures P1 which consist of steps S14-S21 are performed. This procedure P1 is the contents of the application program 41 for measurement, and hard disk 24a ( drawing 5 (a)) mentioned above, a record medium 27 ( drawing 6 ), and the application program 41 for measurement recorded on file 4a ( drawing 7 ) of a server 4 are programs which make a computer 2 perform the above-mentioned procedure P1.

[0031] Next, the detail of a procedure P1 is explained. First, it judges whether the measurement initiation carbon button 33 was turned on in the screen of the display 23 of drawing 4 (step S14). The measurement initiation carbon button 33 serves as ON by clicking on a screen using the mouse of the input section 21. If the measurement initiation carbon button 33 is turned on (step S14; YES), the data-processing section 22 will connect a computer 2 to a server 4 through the communications control section 26 and the Internet 3 (step S15). Then, the signal showing starting measurement with a measuring instrument 1 is transmitted to a server 4 from a computer 2 (step S16).

[0032] In a server 4, the IP address included in the received measurement start signal is read, and a user is specified with reference to the user table 45 as steps S6 and S7 of drawing 8 explained that the above-mentioned measurement start signal was received (step S23). (step S22) And the account data of the accounting data table 46 classified by user is incremented and updated (step S24).

[0033] On the other hand, in a computer 2 side, after transmission of the measurement start signal of step S16 is completed, the data-processing section 22 ends connection between a computer 2 and the Internet 3 (step S17). A computer 2 is separated from a server 4 by this. Then, measurement by the measuring instrument 1 is performed (step S18), and based on the measurement data, the data-processing section 22 performs data processing, and displays a measurement result on a display 23 like drawing 4 (step S19).

[0034] Next, it judges whether the application program for measurement is ended (step S20). Actuation will be ended if actuation of program termination is performed (step S20; YES). If it judges whether the measurement initiation carbon button 33 was turned on if actuation of program termination was not performed (step S20; NO) (step S21) and the measurement initiation carbon button 33 is not turned on, either (step S21; NO), it returns to step S20 and waits for termination of a program.

[0035] Moreover, if the measurement initiation carbon button 33 is turned on (step S21; YES), it will return to step S15, a computer 2 will be connected to a server 4, and the 2nd measurement start signal will be transmitted to a server 4 (step S16). In a server 4, the above-mentioned measurement start signal

is received (step S22), an IP address is read, a user is specified from the user table 45 (step S23), and the account data of the accounting data table 46 classified by user is incremented and updated after that (step S24). Thus, whenever it receives a measurement start signal from a computer 2, the increment of the accounting data table 46 classified by user is carried out. In a computer 2 side, after transmission of a signal is completed, connection between a computer 2 and the Internet 3 is ended (step S17), and the actuation mentioned above is repeated henceforth.

[0036] In the example of drawing 9, a computer 2 is connected to a server 4 as mentioned above at the time of measurement initiation of a measuring instrument 1, and a measurement start signal is transmitted to a server 4 from a computer 2. And in the server 4, this signal was received and the accounting data table 46 classified by user is updated. Therefore, whenever a measuring instrument 1 is used, a measurement start signal will be transmitted to a server 4, and the increment of the accounting data table 46 classified by user is carried out every [ 1 ] to one use of a measuring instrument 1. For this reason, the frame charged turns into the amount of money according to the use count of a measuring instrument. Moreover, since measurement will not be started if it is not after connecting a computer 2 to a server 4 and transmitting a measurement start signal, positive accounting can be performed.

[0037] Drawing 10 is a flow chart which shows other operation gestalten of this invention, and is an example which performs accounting after measurement termination. Steps S31-S33 are equivalent to steps S1-S3 of drawing 8, respectively, and steps S34-S42 support step S4 of drawing 8. Moreover, steps S43-S45 are equivalent to steps S5-S7 of drawing 8, respectively. Hereafter, actuation is explained with reference to drawing 10.

[0038] If the power source of a measuring instrument 1 is turned on (step S31) and the power source of a computer 2 is turned on (step S32), the application program 41 for measurement stored in hard disk 24a will be started (step S33). A screen as shown by drawing 4 is displayed on the display 23 of a computer 2 by the startup of this program 41 (however, data un-displaying).

[0039] Then, a series of procedures P2 which consist of steps S34-S42 are performed. This procedure P2 is the contents of the application program 41 for measurement, and hard disk 24a ( drawing 5 (a)) mentioned above, a record medium 27 ( drawing 6 ), and the application program 41 for measurement recorded on file 4a ( drawing 7 ) of a server 4 are programs which make a computer 2 perform the above-mentioned procedure P2 with this operation gestalt.

[0040] Next, the detail of a procedure P2 is explained. First, it judges whether the measurement initiation carbon button 33 was turned on in the screen of the display 23 of drawing 4 (step S34). If the measurement initiation carbon button 33 is turned on (step S34; YES), measurement by the measuring instrument 1 would be performed (step S35), and measurement would be completed normally, or (didn't the error etc. occur?) it will be judged whether it is no (step S36). When measurement is not completed normally, it returns to (step S36; NO) and step S34, and measures again. If measurement is completed normally (step S36; YES), the data-processing section 22 will connect a computer 2 to a server 4 through the communications control section 26 and the Internet 3 (step S37). And the signal showing measurement by the measuring instrument 1 having been completed is transmitted to a server 4 from a computer 2 (step S38).

[0041] In a server 4, if the above-mentioned measurement terminate signal is received (step S43), the IP address included in the measurement terminate signal which received will be read, and a user will be specified with reference to the user table 45 (step S44). And the account data of the accounting data table 46 classified by user is incremented and updated (step S45).

[0042] On the other hand, in a computer 2 side, after transmission of the measurement terminate signal of step S38 is completed, the data-processing section 22 ends connection between a computer 2 and the Internet 3 (step S39). A computer 2 is separated from a server 4 by this. Then, the data-processing section 22 performs data processing based on the measurement data obtained at step S35, and displays a measurement result on a display 23 like drawing 4 (step S40).

[0043] Next, it judges whether the application program for measurement is ended like the case of drawing 9 (step S41). Actuation will be ended if actuation of program termination is performed (step S41; YES). If it judges whether the measurement initiation carbon button 33 was turned on if actuation

of program termination was not performed (step S41; NO) (step S42) and the measurement initiation carbon button 33 is not turned on, either (step S42; NO), it returns to step S41 and waits for termination of a program.

[0044] Moreover, if it will return to step S35 and measurement will be performed, if the measurement initiation carbon button 33 is turned on (step S42; YES), and measurement is completed normally (step S36; YES), a computer 2 will be connected to a server 4 (step S37), and the 2nd measurement terminate signal will be transmitted to a server 4 (step S38). In a server 4, the above-mentioned measurement terminate signal is received (step S43), an IP address is read, a user is specified from the user table 45 (step S44), and the account data of the accounting data table 46 classified by user is incremented and updated after that (step S45). Thus, whenever it receives a measurement terminate signal from a computer 2, the increment of the accounting data table 46 classified by user is carried out. In a computer 2 side, after transmission of a signal is completed, connection between a computer 2 and the Internet 3 is ended (step S39), and the actuation mentioned above is repeated henceforth.

[0045] In the example of drawing 10, a computer 2 is connected to a server 4 as mentioned above at the time of measurement termination of a measuring instrument 1, and a measurement terminate signal is transmitted to a server 4 from a computer 2. And in the server 4, this signal was received and the accounting data table 46 classified by user is updated. Therefore, whenever a measuring instrument 1 is used, a measurement terminate signal will be transmitted to a server 4, and the increment of the accounting data table 46 classified by user is carried out every [ 1 ] to one use of a measuring instrument 1. For this reason, the frame charged turns into the amount of money according to the use count of a measuring instrument. Moreover, since the signal for accounting is transmitted to a server after it is checked that measurement has been completed normally, even when measurement goes wrong, the fault that accounting is carried out can be avoided.

[0046] Drawing 11 is a flow chart which shows other operation gestalten of this invention, and is an example which performs accounting after a measurement result display. Steps S51-S53 are equivalent to steps S1-S3 of drawing 8, respectively, and steps S54-S62 support step S4 of drawing 8. Moreover, steps S63-S65 are equivalent to steps S5-S7 of drawing 8, respectively. Hereafter, actuation is explained with reference to drawing 11.

[0047] If the power source of a measuring instrument 1 is turned on (step S51) and the power source of a computer 2 is turned on (step S52), the application program 41 for measurement stored in hard disk 24a will be started (step S53). A screen as shown by drawing 4 is displayed on the display 23 of a computer 2 by the startup of this program 41 (however, data un-displaying).

[0048] Then, a series of procedures P3 which consist of steps S54-S62 are performed. This procedure P3 is the contents of the application program 41 for measurement, and hard disk 24a ( drawing 5 (a)) mentioned above, a record medium 27 ( drawing 6 ), and the application program 41 for measurement recorded on file 4a ( drawing 7 ) of a server 4 are programs which make a computer 2 perform the above-mentioned procedure P3 with this operation gestalt.

[0049] Next, the detail of a procedure P3 is explained. First, it judges whether the measurement initiation carbon button 33 was turned on in the screen of the display 23 of drawing 4 (step S54). If the measurement initiation carbon button 33 is turned on (step S54; YES), measurement by the measuring instrument 1 will be performed (step S55), and it will be judged whether measurement was completed normally (step S56). When measurement is not completed normally, it returns to (step S56; NO) and step S54, and measures again. If measurement is completed normally (step S56; YES), the data-processing section 22 will perform data processing based on the measurement data obtained at step S55, and will display a measurement result on a display 23 like drawing 4 (step S57).

[0050] Then, the data-processing section 22 connects a computer 2 to a server 4 through the communications control section 26 and the Internet 3 (step S58). And the signal showing the display of the measurement result by the measuring instrument 1 having been completed is transmitted to a server 4 from a computer 2 (step S59).

[0051] In a server 4, if the above-mentioned completion signal of a display is received (step S63), the IP address included in the measurement terminate signal which received will be read, and a user will be

specified with reference to the user table 45 (step S64). And the account data of the accounting data table 46 classified by user is incremented and updated (step S65).  
[0052]



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DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is the system configuration Fig. showing an example of the accounting system concerning this invention.

[Drawing 2] It is the block diagram showing the configuration of a measuring instrument.

[Drawing 3] It is the block diagram showing the hardware configuration of a computer.

[Drawing 4] It is drawing showing an example of the display screen of a display.

[Drawing 5] It is drawing having shown the contents of storage of the storage section on the table.

[Drawing 6] It is drawing having shown the contents of storage of a record medium on the table.

[Drawing 7] It is drawing having shown the contents of storage of the file of a server on the table.

[Drawing 8] It is the outline flowchart which showed a series of actuation of an accounting system.

[Drawing 9] It is the flow chart which showed actuation of an accounting system to the detail.

[Drawing 10] It is the flow chart which shows other operation gestalten.

[Drawing 11] It is the flow chart which shows other operation gestalten.

[Drawing 12] It is the flow chart which shows other operation gestalten.

[Drawing 13] It is the flow chart which shows other operation gestalten.

[Drawing 14] It is drawing having shown the contents of storage of the storage section in other operation gestalten on the table.

[Drawing 15] It is drawing having shown the contents of storage of the record medium in other operation gestalten on the table.

[Drawing 16] It is drawing having shown the contents of storage of the record medium in other operation gestalten on the table.

[Drawing 17] It is drawing having shown the contents of storage of the file of the server in other operation gestalten on the table.

[Drawing 18] It is drawing having shown the contents of storage of the file of the server in other operation gestalten on the table.

[Drawing 19] It is the flow chart which shows other operation gestalten.

[Drawing 20] It is the flow chart which shows other operation gestalten.

[Drawing 21] It is the flow chart which shows other operation gestalten.

[Drawing 22] It is the flow chart which shows other operation gestalten.

[Drawing 23] It is the flow chart which shows other operation gestalten.

[Drawing 24] It is the flow chart which shows other operation gestalten.

[Drawing 25] It is drawing having shown the contents of storage of the storage section in a measuring instrument on the table.

[Drawing 26] It is the system configuration Fig. showing other examples.

[Drawing 27] It is the block diagram showing the configuration of a measuring instrument.

[Description of Notations]

1 Measuring Instrument

1a Storage section



2 Computer  
3 Internet  
4 Server  
4a The file of a server  
24 Storage Section  
24a Hard disk  
27 Record Medium  
41 Application Program for Measurement  
42 Application Program for Accounting  
51 Measuring Instrument  
52 Circuit  
53 Server  
67 Record Medium  
64 Storage Section

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[Translation done.]

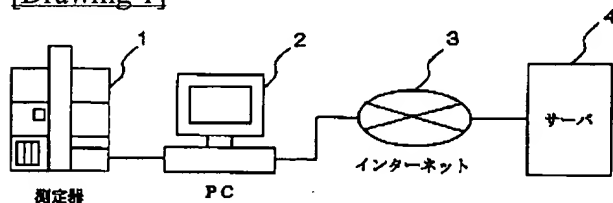
## \* NOTICES \*

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

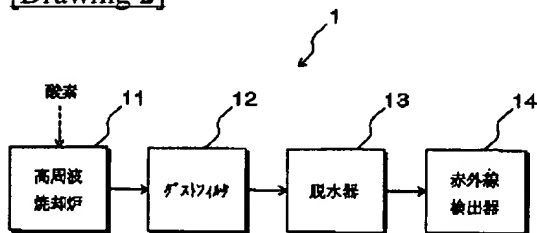
1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

## DRAWINGS

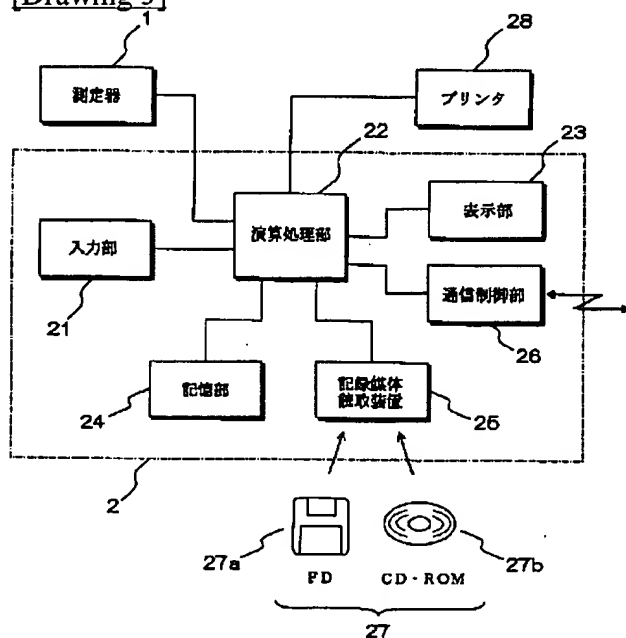
[Drawing 1]



[Drawing 2]



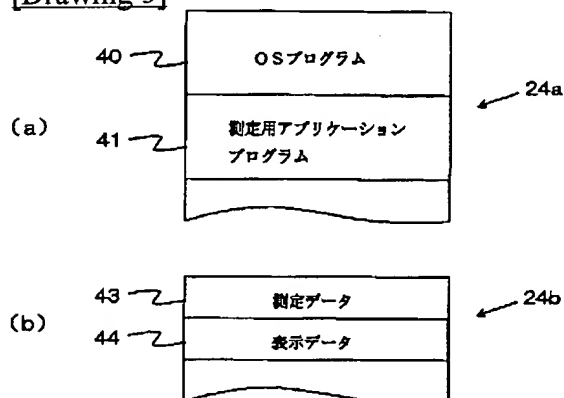
[Drawing 3]



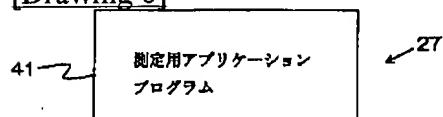
[Drawing 4]

Figure 23 shows a software interface for material testing. The interface includes several input fields and a graph. The top section has a header bar (23) and a title bar (32). Below the header, there are input fields for C% (0.08537) and S% (0.07941), labeled 30. To the right of these fields is a graph (32) showing multiple curves. Below the graph, there are input fields for 'テストNo.' and '試料名'. To the right of the graph, there are buttons for 'アラームクリア', 'プリセット', '測定モード', '試料名', and '質量'. Below these buttons is a table (31) with columns: No., 試料名, 質量, モード, C%, S%, CT, ST, 状態, and DATE. The table has two rows of data. Below the table, there are buttons for '連続測定' (34) and '測定開始' (33).

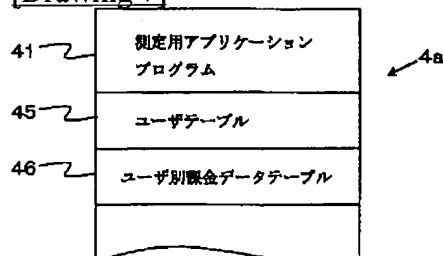
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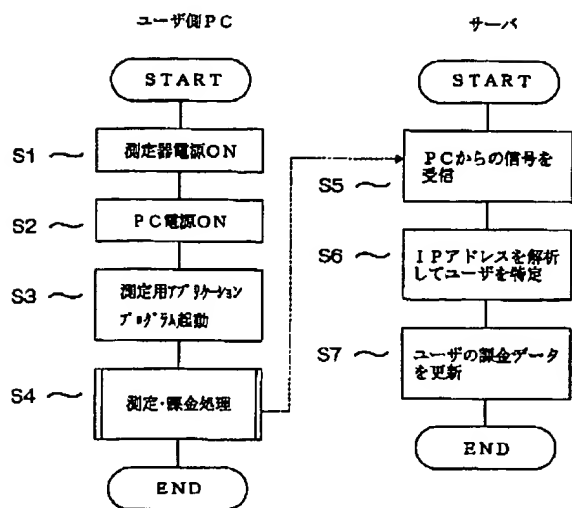
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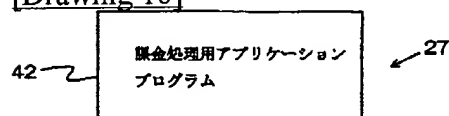
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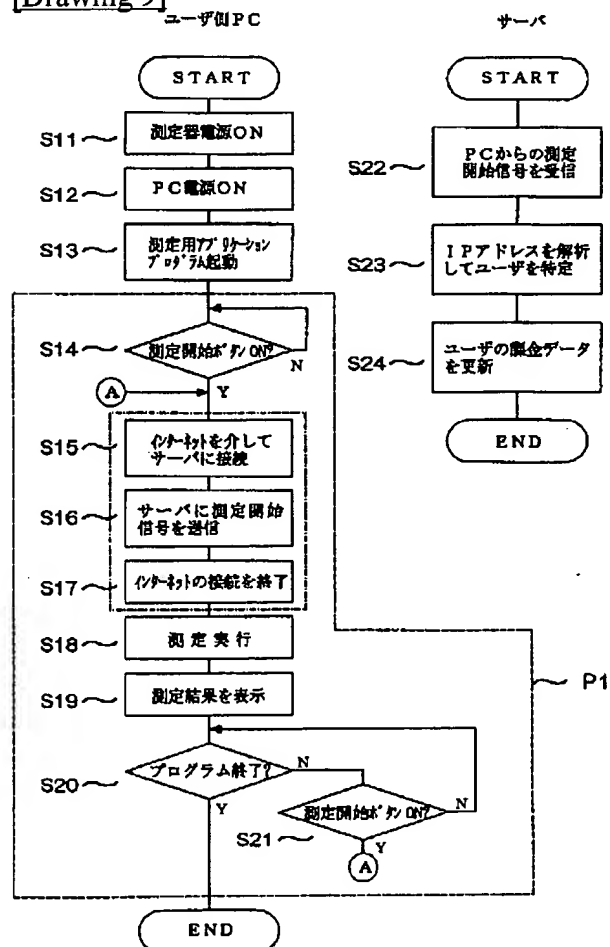
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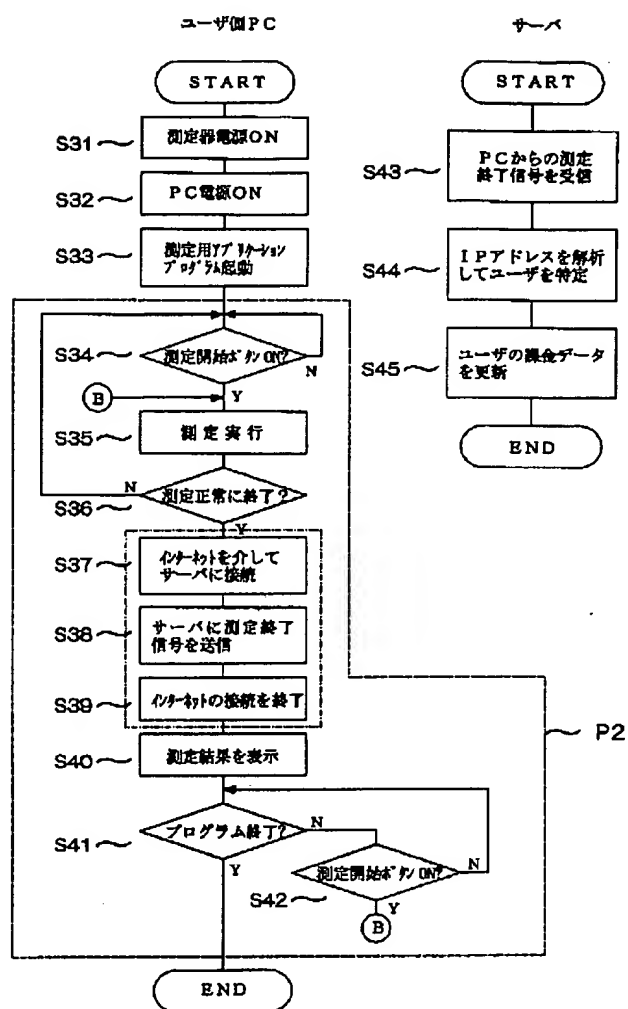
[Drawing 16]



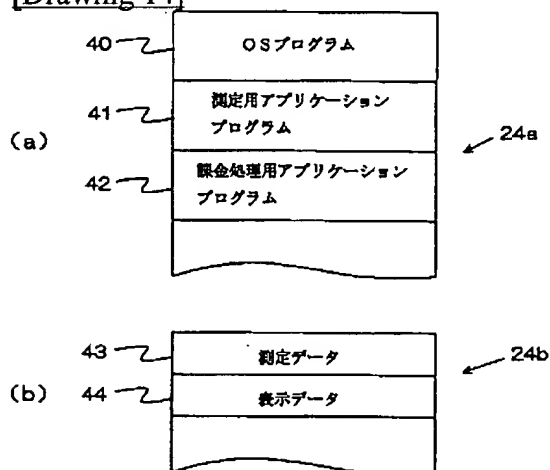
[Drawing 9]



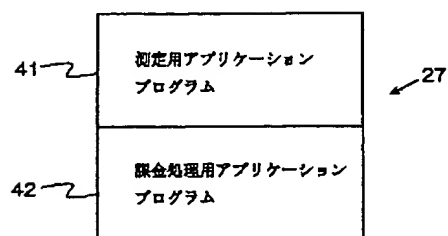
[Drawing 10]



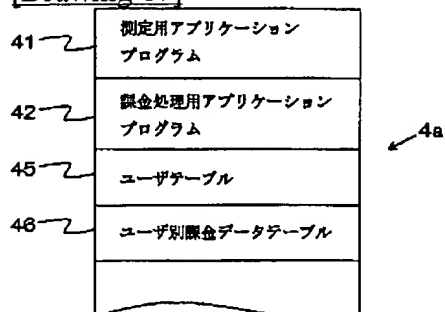
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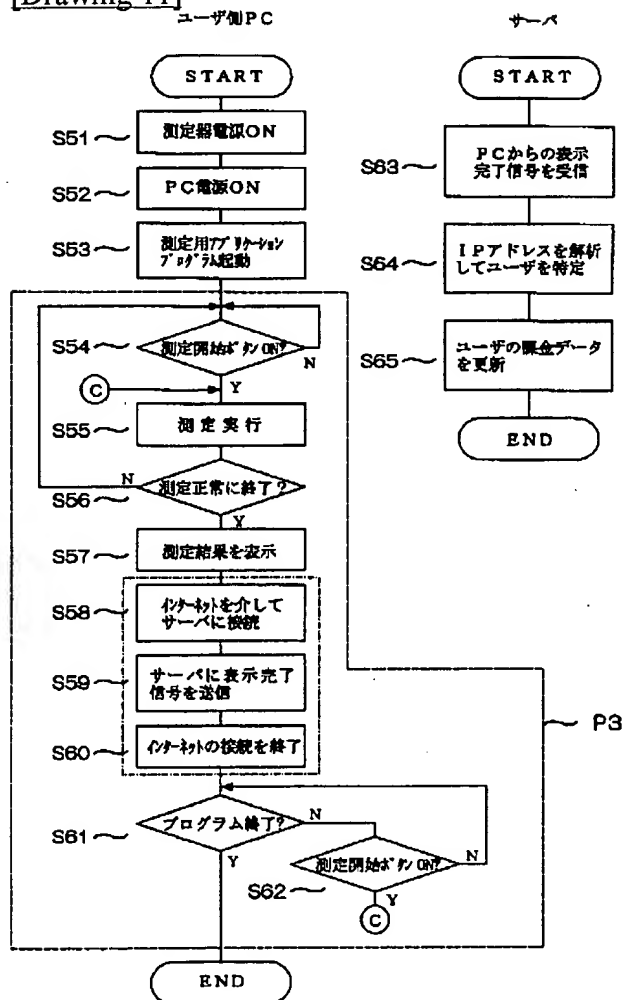
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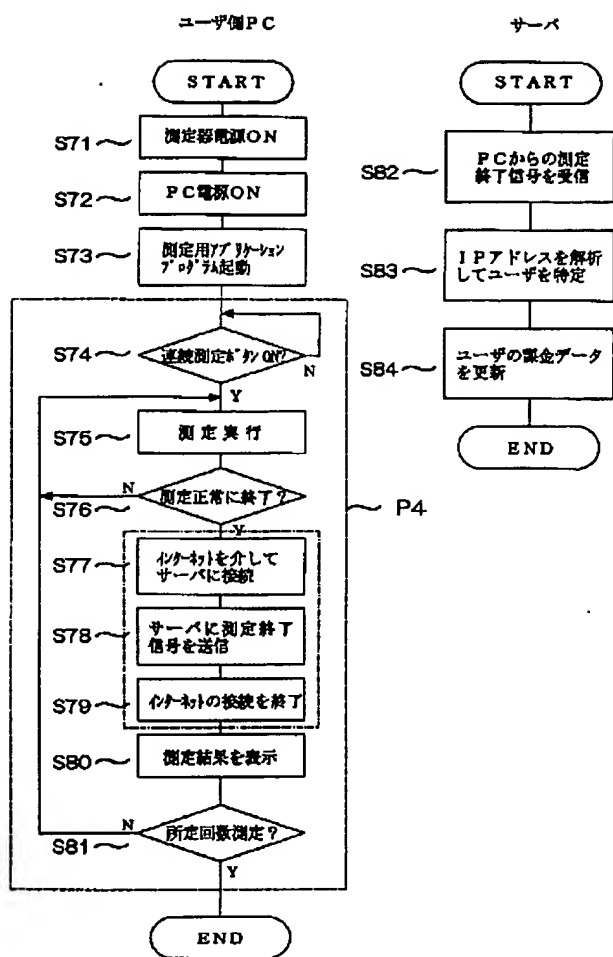
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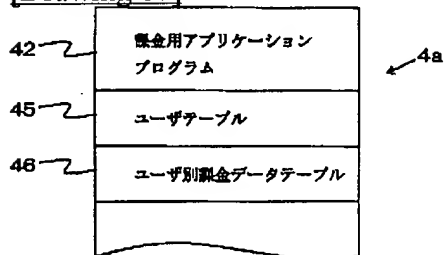
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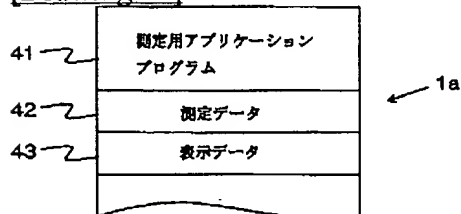
[Drawing 12]



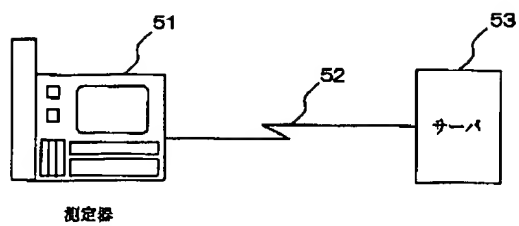
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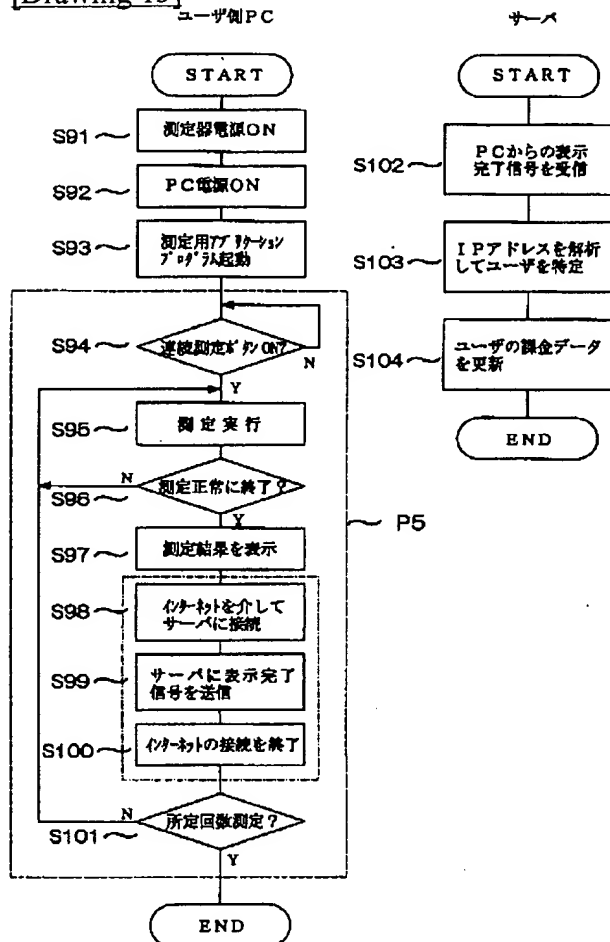
[Drawing 25]



[Drawing 26]

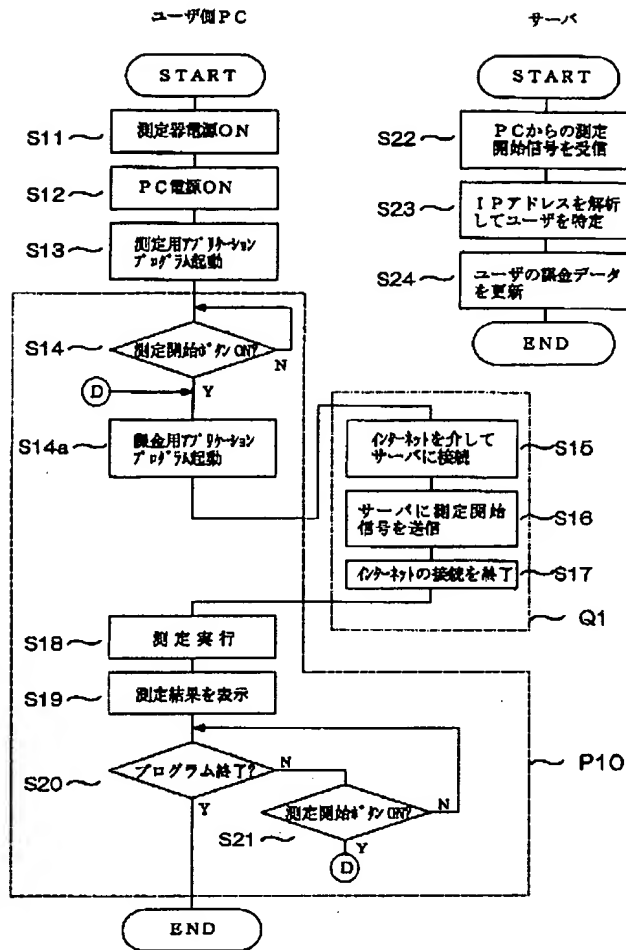


[Drawing 13]

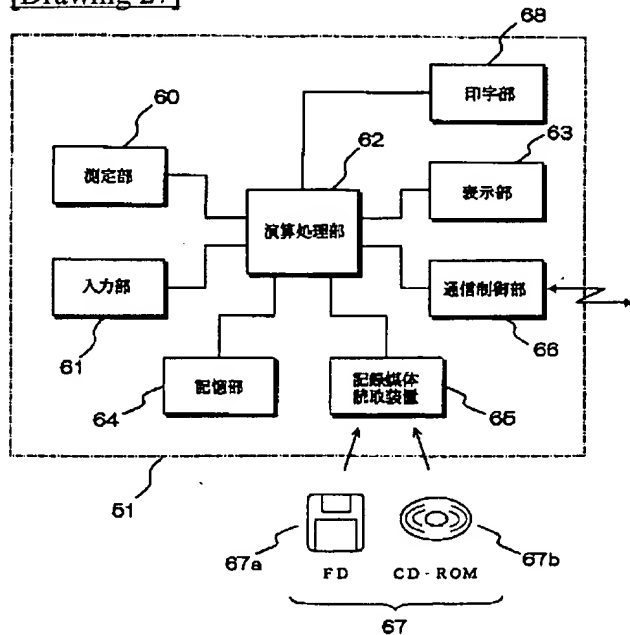


[Drawing 19]

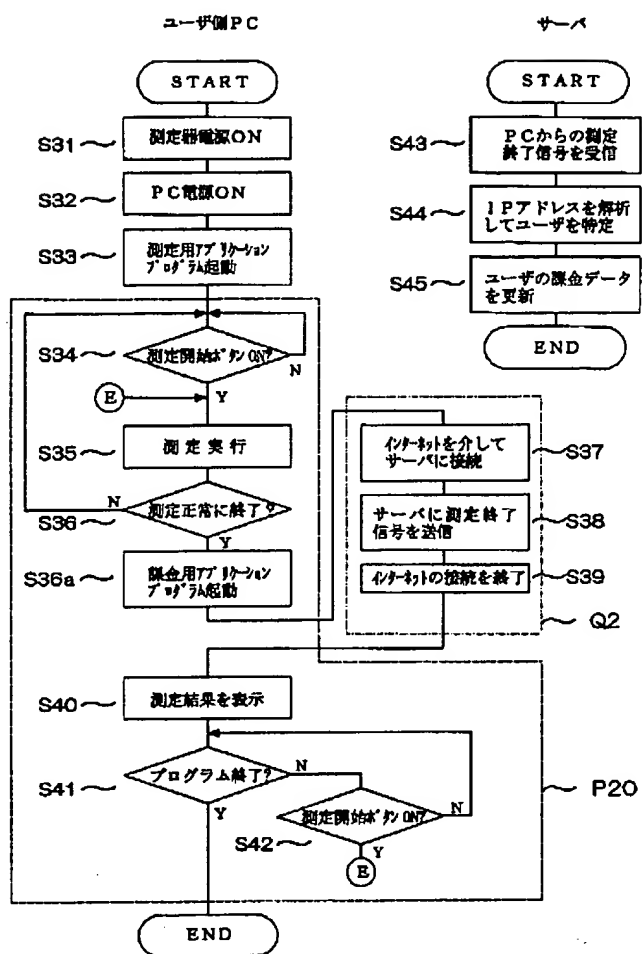




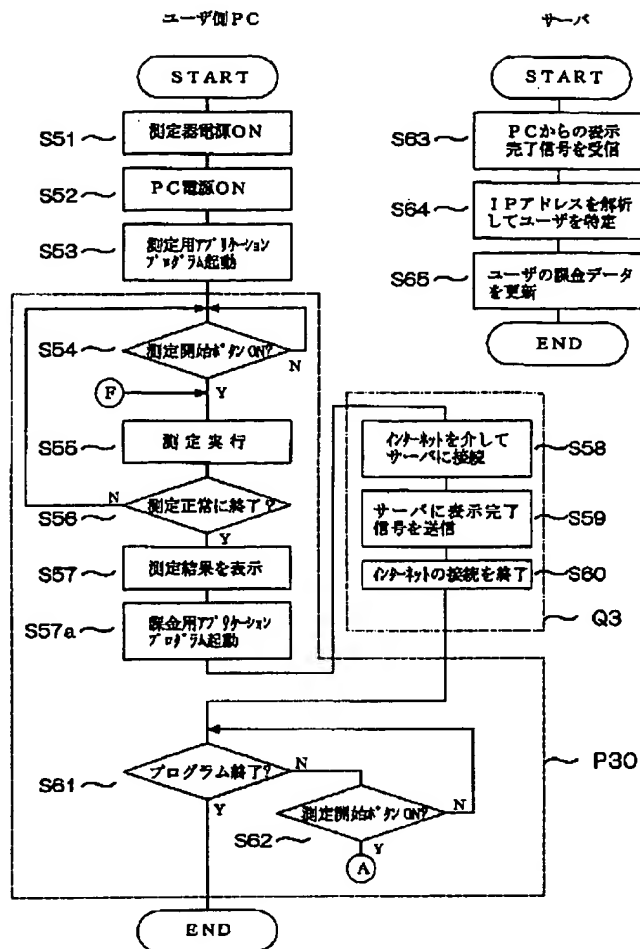
[Drawing 27]



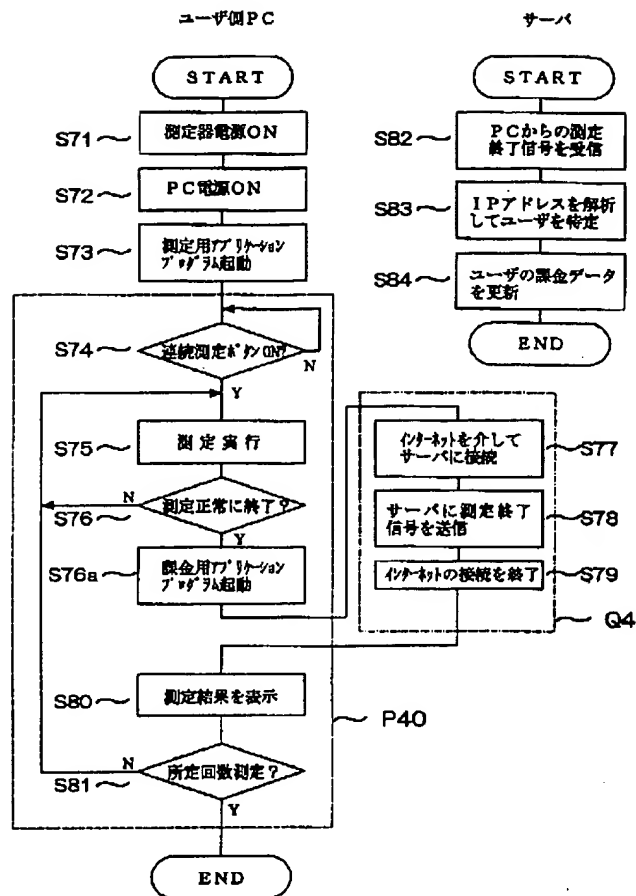
[Drawing 20]



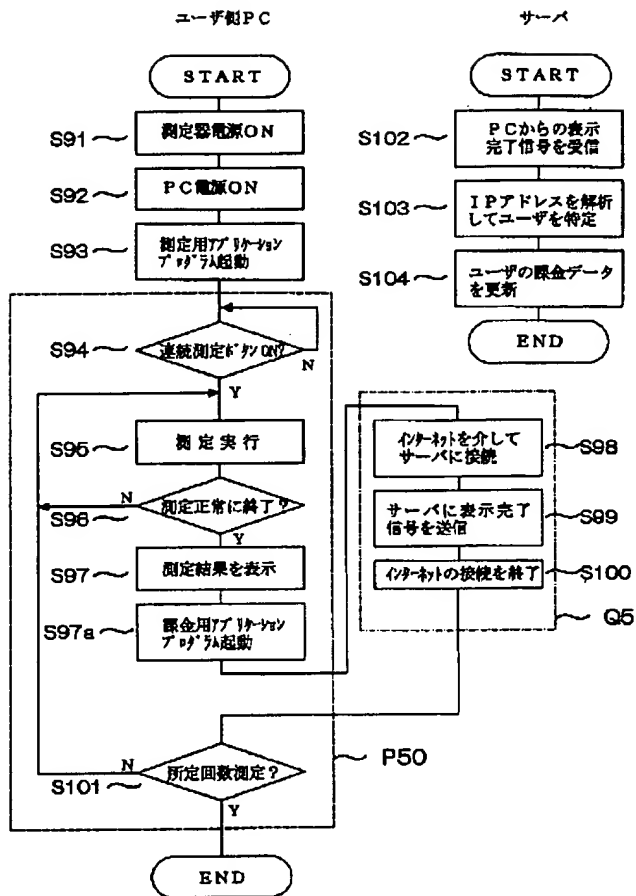
[Drawing 21]



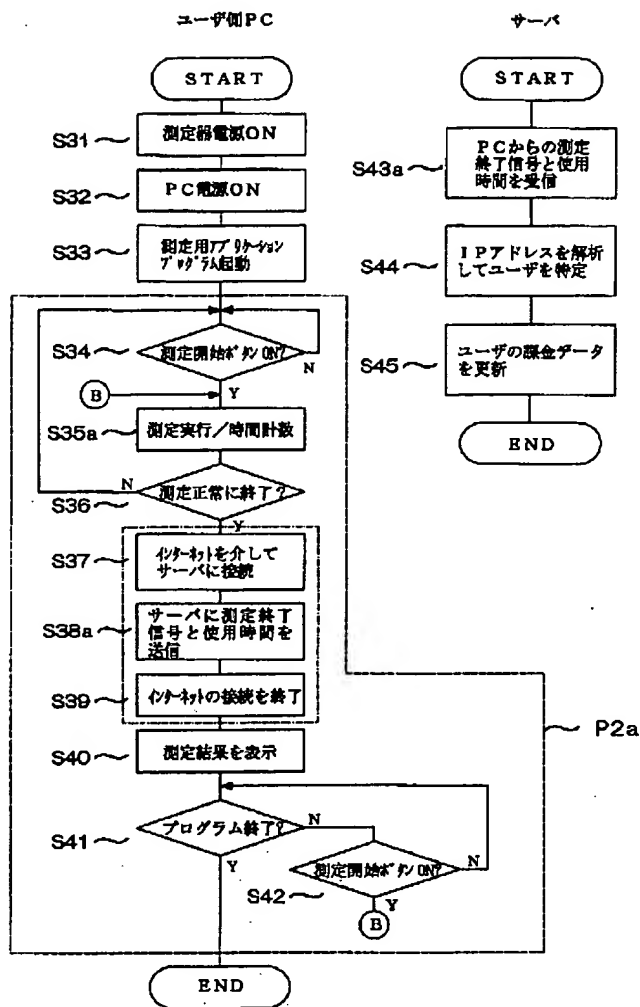
[Drawing 22]



[Drawing 23]



[Drawing 24]



[Translation done.]